Acorn COMPUTING

2 PACKED DISKS

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Low cost professional fonts unleash the full design power of your Acorn

EXCLUSIVE PLAYABLE LEVELS

KV

FIVE complete levels from this colourful new game

PHAËTHON

Play a tempting section of the spheres of destruction

MEGADISK EDUCATION

Get mapping with Topographer & Navigator

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- Databay cheats
- TechForum ... and much, much more

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europress PUBLICATIONS

DECEMBER 1993 VOL.11 NO.10 £3.95 Hfl 17.95

RESULTZ REVIEWED • POWER PROGRAMMING • HINTS & TI

more news from Colton Software

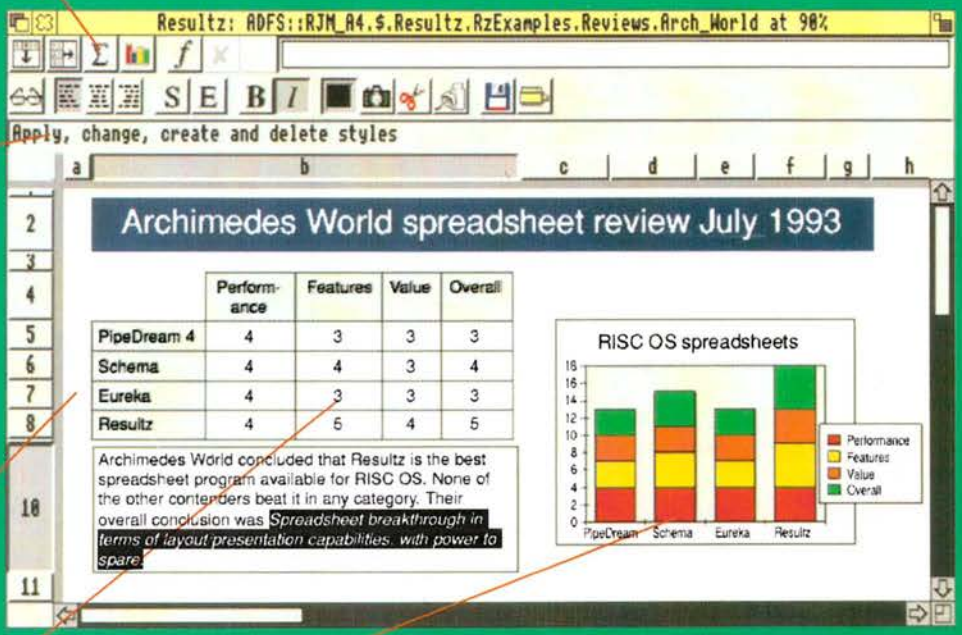
New from the Archimedes' spreadsheet experts comes Resultz, the ultimate spreadsheet for RISC OS.

It's packed with powerful features to help you work fast, whether you're working on a classroom project or managing your business.

It recalculates faster than any competitor, and uses background recalculation so that you're never waiting for the computer to catch up. It will automate your work with the *Fill* and *Autosum buttons* - just select a group of numbers and Resultz writes a formula which adds them up automatically.

Resultz isn't just for power users. It's designed to help novice users work productively. Interactive help makes it easy to use Resultz' comprehensive set of functions. Every time you pick one of the 190 built-in functions from the selector, *tips on using it appear on screen.*

Your data will look better than ever, with colourful charts incorporating your own pictures. Unlike other spreadsheets, Resultz shows your pages on screen, so what you see on screen is exactly what will print out on the page (we call it *spreadsheet DTP*). The style editor places fonts and formats at your fingertips. It's easy to build *tables* and *forms*, and to add *charts* or *pictures* to worksheets.


Resultz: ADFS::RJM_A4.$.Resultz.RzExamples.Reviews.Arch_World at 98%
Apply, change, create and delete styles
Archimedes World spreadsheet review July 1993
Performance
Features
Value
Overall
PipeDream 4 4 3 3 3
Schema 4 4 3 4
Eureka 4 3 3 3
Resultz 4 5 4 5
Archimedes World concluded that Resultz is the best spreadsheet program available for RISC OS. None of the other contenders beat it in any category. Their overall conclusion was Spreadsheet breakthrough in terms of layout presentation capabilities, with power to spare.
RISC OS spreadsheets
PipeDream
Schema
Eureka
Resultz
Performance
Features
Value
Overall

And Resultz is just £119+VAT.

Resultz and Wordz are the first members of the FireWorkz suite of programs, designed to share the same intuitive easy-to-use interface, and to make it easy to share data between word processor, database and spreadsheet. . .

resultz

. ..when you need Resultz, send for your free brochure and demo disc

name

address

COLTON software

2 Signet Court, Swanns Road,
Cambridge CB5 8LA
Telephone 0223 311881
Fax 0223 312010

Font explosion

The Monotype fonts have arrived – hundreds of professional ones are now available for Acorn machines at low prices. Plus we look at a selection of fancy display fonts with that medieval flavour. Turn to Page 49.

REGULARS

Comment 17
Despite what the experts say Steve Turnbull doesn't think computing is a science. He explains exactly why.

News 19
All the latest news of products and events taking place in the fast changing world of the Acorn computer.

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Teri Paul is back again with her pick of public domain and shareware programs to enhance your computer.

New **TechForum** 53
Expert programmer? This new hints and tips series is just for you with ideas to help you work.

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Our wizard guides you through more of Fish! plus a special on Elite for both 8 and 32-bit machines.

Problem Solved 91
Mike Cooke opens his mail and shares the secrets behind some of those tricky hardware problems.

Graphics 104
To liven up his pictures Mike Goldberg explores a technique for adding textures to his plain illustrations.

Body Building 108
Mike Cook's computer-guided telescope moves on to the comms system and overrun feedback lights.

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REVIEWS

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- Kim's game
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- Font directory
- FlyPrint
- HatchBack

Rephorm 61
First there was Morpheus, now there's Rephorm. We see its strengths and how it differs from its rival.

Night Sky 64
Look into the sky and find out what you're seeing with this new star-watching software from Clares.

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- James Pond II: Robocod
- The Crystal Maze
- Play it Again Sam 2
- Phaethon

ProjectING 95
A project management package with a long history, originated by Acorn and brought to you by PRES.

FEATURES

MegaDisk 4
Check out what's in store for you this month on the two best cover disks available for the Acorn 32-bits.

BBC Disk 10
Full details on what's on the subscription disk for the 8-bit BBC Micro this month and how to use it.

Competition 30
Your chance to win a Crystal Maze experience in Blackpool, courtesy of Sherston and *Acorn Computing*.

The Heap 55
RISC OS provides a lot of help with memory management. Learn how to use it in your own programs.

Communications 67
Smart modems versus smart software – we look at the problems you can face and how to get around them.

Essential Music 74
How to use Midi instruments to best effect with software sequencers on your Acorn 32-bit micro.

THE MEGADISKS

Britain's best Acorn cover disks contain hours of fun and a host of useful utilities linked to our editorial features to make the magazine come alive on your desktop!

Full details about the packed MegaDisks — see Page 4.

- **KV**
  Five action-packed levels of fun
- **Phaethon**
  Five levels of puzzle madness
- **Topographer**
  Map drawing made easy
- **Navigator**
  Puzzles for navigating with maps
- **Bede**
  Complete sample font to use
- **Lynsoft**
  Quality graphics from the experts
- **Techforum**
  Our new disk-based techy area
- **8-bit programs**
  Make use of your BBC B

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SUBSCRIBE to *Acorn Computing* and you'll get an amazing value-for-money deal that beats all our rivals. Not only do you get a whole year's worth of issues for LESS than any other Acorn magazine, 32-bit owners get TWO disks every month.

See Page 29 for details of this unbelievable offer.

If you have a BBC Micro, *Acorn Computing* is the only newsstand magazine that still supports you. Every month we have complete programs written specially for your computer.

To subscribe, turn to Page 29 now.

• *The editorial and many of the adverts in this magazine were prepared using Impresssion and ArtWorks by Computer Concepts.*

GET YOUR NEWSAGENT TO RESERVE A COPY – SEE PAGE 28

The MegaDisks

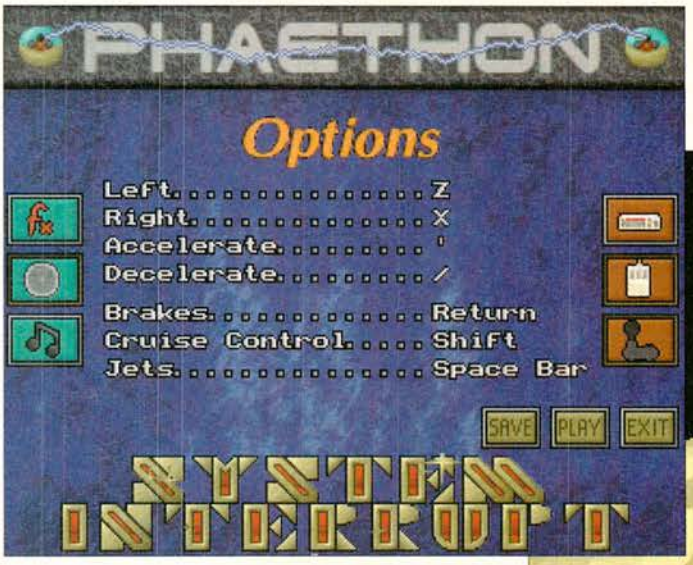
MegaDisk 1

- **Clip Art**
  Guy the Gorilla from Lynsoft
- **Databay**
  SimCash cheat
- **Desktop+Plus**
  Adds directory sprites to the pinboard
- **Fonts**
  Add Bede to your fonts
- **KV**
  Five levels of platforms and ladders
- **System**
  Make sure your modules are up to date
- **Topographer**
  Create your own maps

MegaDisk 2

- **Navigator**
  Find your way round
- **Phaethon**
  Five interplanetary routes to run
- **Reviews index**
  Who said what and when
- **TechForum**
  Micheal Rozdoba helps
- **8-bit programs**
  Make use of your BBC B

Phaethon: Riding the cosmos



● *Phaethon: Choose your weapon – mouse, joystick or keyboard*

● *Out into the void on the first level of Phaethon – now this is nice and easy*

THIS very special version of Phaethon comes from System Interrupt (0749 670058) and gives you five levels to introduce you to the road reserved for the chariots of the gods.

You can customise your orb in the shop and choose the controls before entering the race. Against you are time, physics and some very fiendish puzzles.

You can choose to see how the professionals make a successful run by clicking on the demo for each level you progress to. Then it's up to you. Do you have the nerve and the skill?

If you can master the tactics of traversing the sharp bends, avoiding holes and staying on the oh so narrow road you'll be pitted against puzzles to manoeuvre around, unlock or dexterously avoid – and all millions of miles away from solid ground.

The full version features 140 levels divided into eight zones with 30 original stereo tunes, comprising over an hour of continuous music as well as sound effects and a comprehensive level editor. The full version of Phaethon costs £25.95 and is reviewed on page 86.

To load the demo, simply double-click on the !Phaethon icon. To abort the initial credits screen hit Escape or Return. Control is with a mouse, keyboard or joystick.

In the shop you can buy from the pre-defined templates or make your own selection from the available components – make sure to leave enough credits to play the game. Some levels need additional customisation, so get winning those credits.

Your skill will depend on learning certain techniques, so pay attention to the road, its camber, texture and temperature.

All this will affect your sphere and time – run out of time and you lose. Don't change the colour of the droid as the internal gyroscope gives you an idea of the degree of turn your droid has.

Getting started with the MegaDisks

THE programs on these disks are stored in a highly compressed format which sometimes enables as much as 1.6Mb of programs and data to be stored on a 800k floppy disk

The procedure for running the programs is very straightforward and does not require learning any special methods or techniques.

Switch on your Acorn micro, put the disk in the drive and click the drive icon. Now double-click !ACmenu – there's a short pause while it scans the archive then it displays a window of the contents.

You can treat this new window like any other one for viewing disk contents, you can run programs and open directories by double-clicking them.

Large programs must be unpacked by dragging on to a separate disk before being run. Some may have an !Install program that will do it for you.

We recommend that you always read the !ReadMe files or access the help information via the Help button.

the shop
TURTLE THING
MANUFACTURER: TACHO BALL ACCESSORIES
SPECIFICATIONS: UP TO 2 WEEKS LIFE
COMMENTS: KEEP YOUR COCKPIT FRESH WITH THE PERFUMED TOMMY TURTLE
PRICE:---800Cr
DO YOU WANT TO BUY? - CLICK MOUSE

● *Take the opportunity to customise your sphere as soon as possible*

● *Magnets are deadly so keep a tight rein on your droid*

Bede: Adding a font

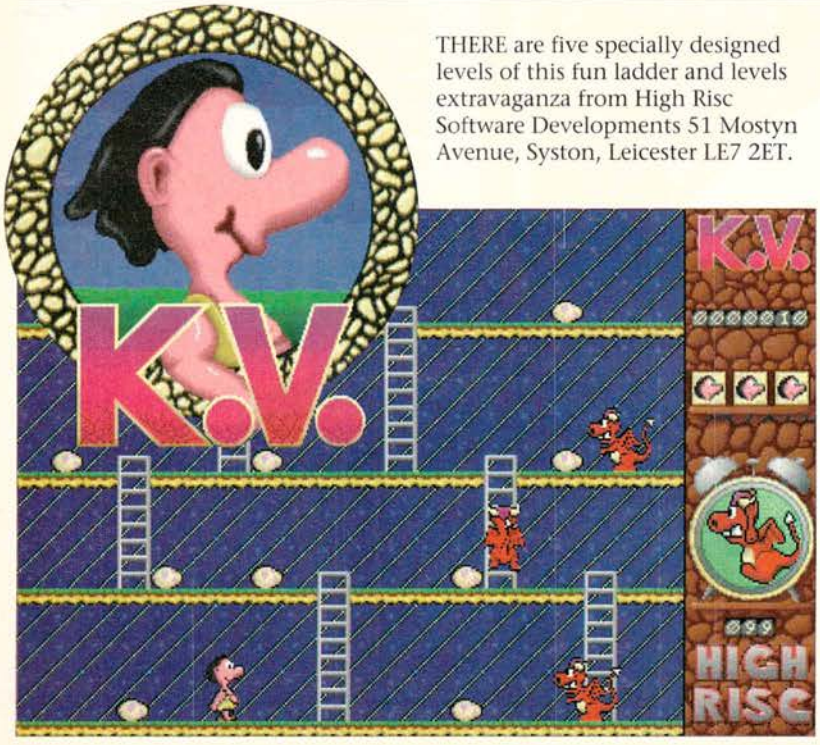
DATAFILE (0934 823005) are giving *Acorn Computing* readers a complete font called Bede. This is a RISC OS 2 font so while it doesn't have the kerning data which RISC OS 3 fonts allow it can be used on all 32-bit machines regardless of your operating system.

To add this stylish medieval font to your !Fonts directory hold down Shift and double-click on !Fonts. Into this drag the directory called Bede.

Re-boot the system and you'll be able to add Bede to your work from now on. For more information on newly available fonts see the article on page 49.

This is Bede an elegant font (with 1 or 2 delightful additions)†.

KV: Egg collector supreme



THERE are five specially designed levels of this fun ladder and levels extravaganza from High Risc Software Developments 51 Mostyn Avenue, Syston, Leicester LE7 2ET.

KV, the cutest caveman around, has to collect enough eggs to make his supper. Unfortunately the evil red dragons have other ideas and will do anything to prevent this little shopper from taking their eggs. So plan your route carefully or find yourself less one life. Each level is passworded but you'll need to be on your toes.

Controls :

Z	Left
X	Right
"	Up
?	Down
Return	Jump
F11	Pause
F12	Quit current game

The full version costs £15 and in the Special Issue of *Acorn Computing*, next month, you can see how our intrepid tester did among 100 levels full of music and sound effects as well as how he coped with a fully desktop-compatible level designer.

FAULTY DISK?

If either of your cover disks has a physical fault – doughnut won't rotate in the sleeve, disk errors and so on – please return it for replacement to:

PC Wise Ltd
Dowlais Top
Business Park
Dowlais
Merthyr Tydfil
Mid Glamorgan
CF48 2YY

If there seems to be a fault with one of the programs please contact us by post describing your machine set-up and exactly what happens when you run the program.

Wanna sell some software?

ACORN COMPUTING is always in the market for good quality applications, utilities and games to put on the MegaDisk and Subscription disk, for 32-bit and 8-bit machines. If you think your program has got what it takes just send it on disk to:

MegaDisk Submissions, Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

Topographer: Pointing you in the right direction

TOPOGRAPHER is a major application which allows adults and children to have lots of fun while learning about maps, contour lines, valleys, rivers and so on. In fact Topographer covers virtually all items found on Ordnance Survey maps.

One of its special features is its 3-D section which allows you to convert a 2-D map into a 3-D model on screen. Imagine turning a set of flat contour lines on a 2-D map into a 3-D model which clearly shows the hill. You define where you look from and what you look at. The full version of Topographer costs £68.04 but on this month's MegaDisks we have a special version courtesy of Clares (0606 48511).

On the disk you'll find a tutorial and manual to get up and running as soon as possible and here is a summary: Double-click on Topo 2D and drag the Start map from the Tutorial directory to the iconbar icon. Choose the Show coords option and this will help to position the pointer correctly.

The numbers in the grid coordinates window change as you move the pointer on the map. You should see five digits in the coordinates window, if not check you have the five digits option selected in the Map to Grid window.

In the following instructions, positions on the map are referred to by a 10-figure coordinate – five figures for the easting position and five for the northing position. For example, 00298 00459 means 00298 easting and 00459 northing.

To move about the map quickly, drag either scroll bar with Adjust in any direction to scroll the document both horizontally and vertically.

Choose the Show features option on the document menu to bring up the features window. Choose Bridge and draw the bridge from 00208 00450 to 00602 00207 by first clicking Select at 00208 00450 and then double-clicking at 00602 00207.

When drawing line features you can backtrack by clicking Adjust to erase one point at a time.

Choose the *Road wider than 4m* feature (yellow) and start the road by clicking Select at 00000 00690 move to 00208 00450 and click Select while holding down Shift. Holding down Shift will ensure that the road goes over the bridge.

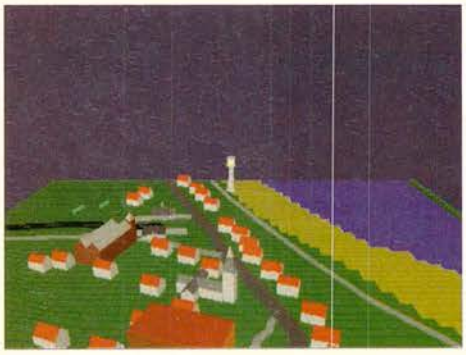
You need to do this at both ends, so move the pointer to 00602 00207 and click Select while holding down Shift again. Complete the road by clicking Select at 00750 00090 and double-clicking Select at 00999 00140.

We now want to add a secondary road feature (orange) and start the road at 00602 00999 and move to 00660 00690.

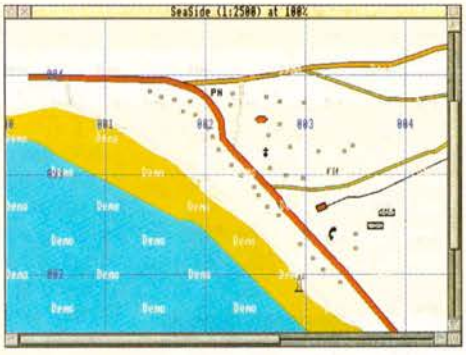
We need to join these two roads neatly so this time finish the road by holding down Ctrl and clicking Select once. A neat junction should be formed.

Now is the time to add some buildings such as a church with a tower and place this at 00636 00685. Why not put a pub at 00664 00722, a post office at 00634 00634 and so on as you like?

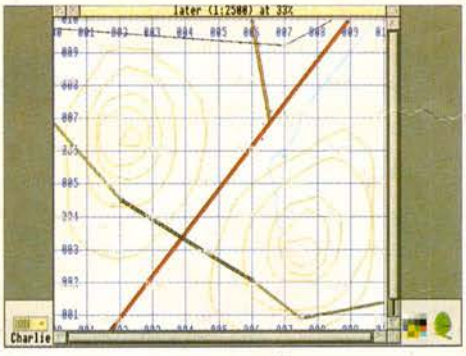
In the full version you could now put your data through the 3D Generator or save the map as a drawfile and import it into Navigator. However, this version does not include the 3-D creation part, though you can see how your maps should look by double-clicking on Topo3D and seeing a rolling demo. The map called Later in the Tutorial directory is a finished copy of the map you have just created above.



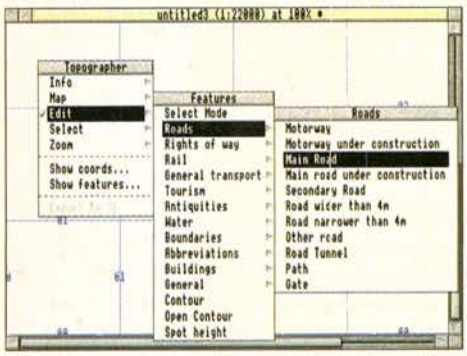
A 3-D view of a seaside resort...



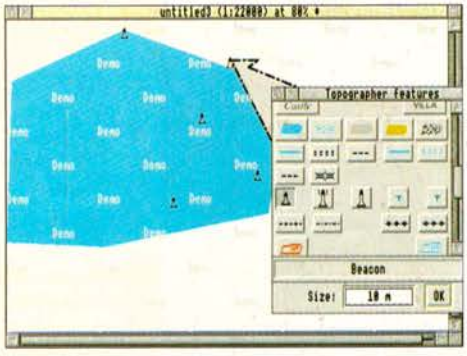
...this one – which you prepared earlier



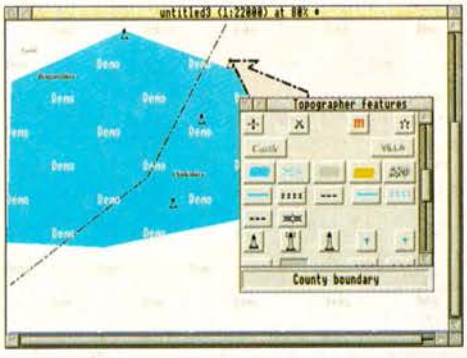
● *You can set contours and intersect roads cleanly and clearly*



● *If your map skills are limited the menu options point the way*



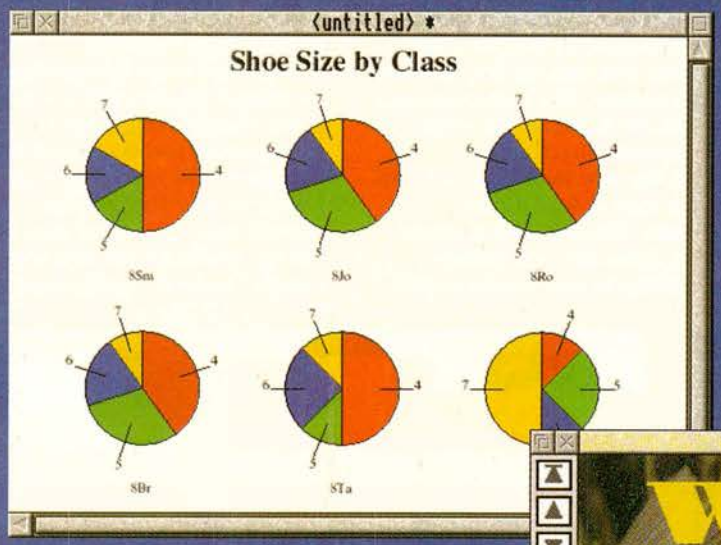
● *The OS standard symbols can be resized from the toolbar and come with descriptions*



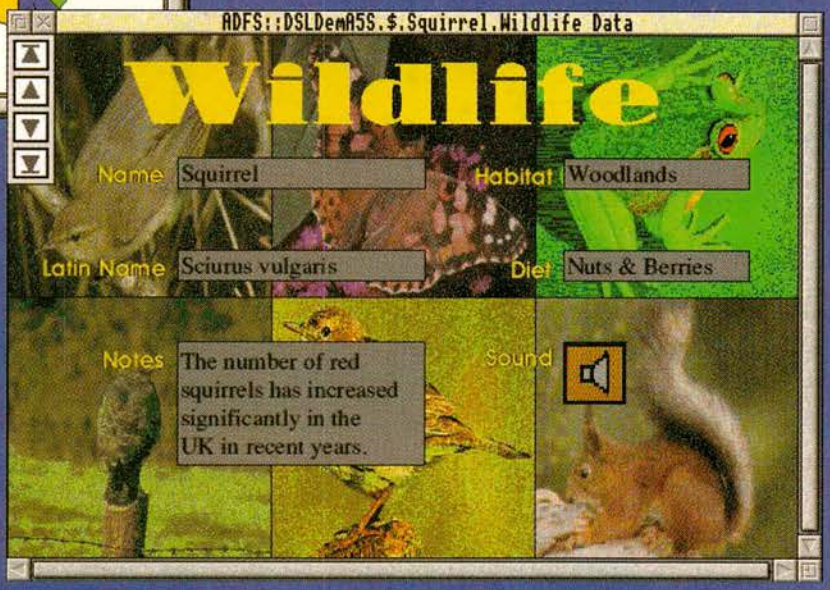
● *It is very straightforward to name features and add boundary details*

'the best' gets better...

Squirrel 2



***Squirrel 2** incorporates 39 separate enhancements which substantially increase Squirrel's power and flexibility.*
This major upgrade makes the definitive RISC OS database even better.



New features include:

- *Data compression*
- *Faster queries*
- *Graphics and text on table backdrops*
- *Default field entries*
- *3D New look*
- *Improved validation*
- *Video buttons*
- *Automatic word wrap in multi line text fields*
- *Data may be displayed and edited in either card or list modes.*
- *Password protection to provide read only fields, and hidden fields.*
- *Integrated graphing facility*
- *Vast new range of mathematical functions*

Squirrel Single User	£ 139.00 + VAT
Squirrel multi user/Site Licence	£ 556.00 + VAT
Squirrel 'C' Developer's Toolkit	£ 99.00 + VAT
Postage & Packing	£ 5.00 + VAT

digital services
9 Wayte Street, Cosham, Portsmouth
Hampshire PO6 3BS Tel 0705 210600

Navigator: Finding your way about

NAVIGATOR from Topologika (0733 244682) displays maps which you can journey around using any of the following navigation systems:

- Rubber banding: Not a navigation system but a good way to get to know the program
- Turtling: Turtle Graphics at two levels of sophistication
- Compass points: Move using 4, 8 or 16 directions
- Compass bearings: Move using 4, 8 or 16 directions
- Ordnance survey: Eastings and northings which can be calibrated to allow simple coordinate input
- Latitude and longitude: Degrees, minutes and hundredths
- Vectors: Moves relative to your current position

The full version allows you to save files and calibrations and though you can print them they will have *demo* overprinted.

The usual price is £55.38 but there is a special offer for *Acorn Computing* readers – see the ReadMe file for more information.

To get started, double-click on !Navig_Dem. It will install on the iconbar in the usual way. If you then click on the Navig_Dem icon, nothing will happen. This is because Navigator needs to know which map to use – and so far you haven't told it.

The Activities directories includes the files School and Falmouth. Open the directory – by double-clicking on it while holding down Shift – and in each you'll find a file called Nav_Data, containing all the maps, calibrations and pre-set options relevant to that activity.

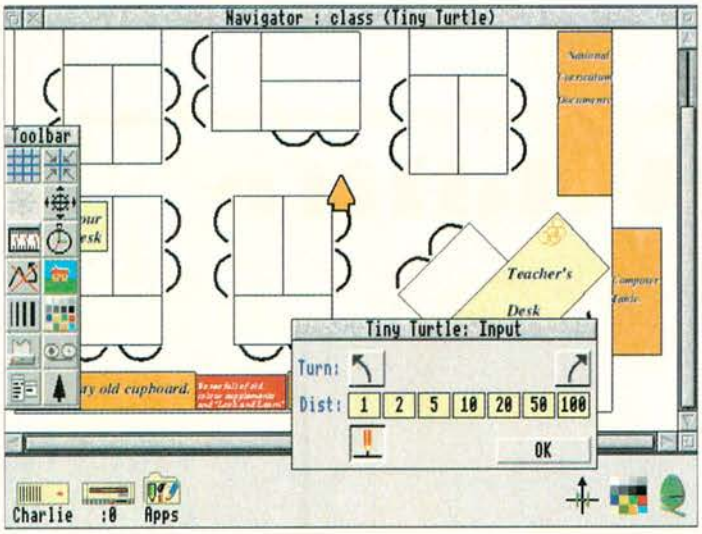
Double-click on the Nav_Data you want and click on the start map for the activity. The start maps are listed in the ReadMe files inside each separate directory.

Drag the start map icon on to the iconbar icon to load it into Navigator. The activities provided on this demo have on-screen instructions so you should be able to work out what to do.

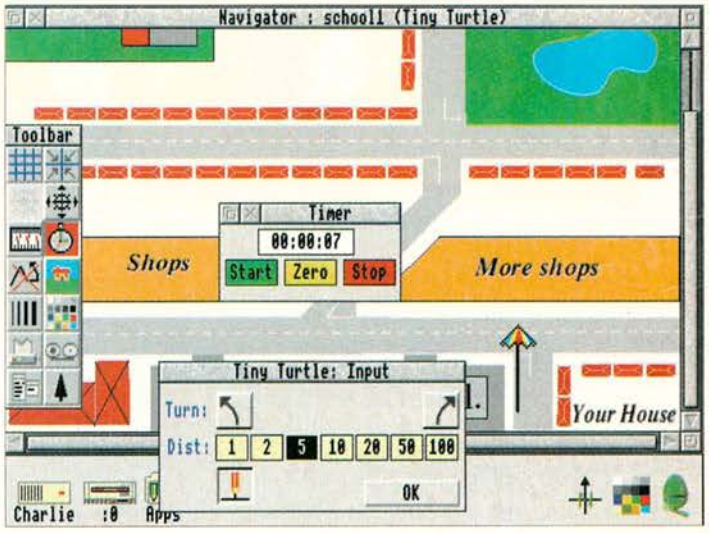
Full details of how to create your own maps are provided on the MegaDisk though you won't be able to save your creations in this version of the software. When creating your own map sequences, put each map sequence in a fresh copy of the !NavData application supplied in the directory Blank, rather than inside those in the other activities, which already contain data for their own map sequences.

Navigator works in any mode and will load sprites of any size. You can scan real OS maps or aerial photos and use Navigator's *hot spot* system to chain these together.

Published maps and photographs are subject to copyright but you could always create maps in Topographer and drag them into Navigator. The full versions of Navigator and Topographer complement each other well. For further details see the article in October issue of *Acorn Computing*.



● *You can use Navigator to explain and practise the principles of turtle graphics*



● *If you're feeling adventurous pit your logo techniques against the clock*

Loads of other goodies

CLIP ART from Lynsoft (0287 624843) includes a host of ghoulish and ghastly beings plus beautifully drawn portraits of celebrities. Over the next few months we'll be featuring these on the MegaDisks – space permitting. You can then use these sprite files in your own work. We start this month with London Zoo's famous ex-inhabitant Guy the Gorilla.

Desktop+ now has added features and all the source code so you can delve into its intricacies for yourself.

In addition there is the Reviews Index telling you when and where products have been reviewed over the years; 8-bit programs for those with BBC Bs and Masters and a serial link to port the programs across.

You can also run these on your 32-bit machine using the !65Host. If you are unsure on how to do this it was covered in the November issue of *Acorn Computing* or send a SSAE to Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP for details.

The Crystal Maze is a Chatsworth Television production
for Channel 4 based on ideas by Jacques Antoine © 1990

THE CRYSTAL MAZE

The Crystal Maze is available exclusively for Acorn 32 bit computers. AVAILABLE NOW from Sherston Software or your local Acorn supplier

The Crystal Maze is a must for everyone from lovers of mind-bending puzzles to joystick -frenzy enthusiasts'

Into the Aztec zone.....

The final challenge!

Now you can play TV's No.1 Adventure Game

Try your hand at a game of skill ....

The Ocean zone contains new challenges ....

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Acorn COMPUTING

Don't miss out on the great programs for the Acorn 8-bit machines that you can receive every month. From software written specially for *Acorn Computing* readers to an excellent selection of PD programs.

Subscribe now, turn to Page 28

Q-Master: A bit of fun in the potting shed

Q-MASTER is an excellent version of Pool for the BBC Micro. It uses the most common rules and has very accurate ball movement routines. When you run it you'll be asked for the mode you want: Press 1 to play an 8-ball match with the computer or a friend.

Enter each player's name. Computer or *H*uman – if computer you will also have to enter its skill – and the number of frames in the match.

Press 2 for the Options screen which gives you the ability to load previously saved games, enter High-speed or maximum break attempts and so on. You can also enter the option screen by pressing O at any time.

Q-Master was written by Grahame Taylor and Alan Troth and originally published by The Fourth Dimension

The rules

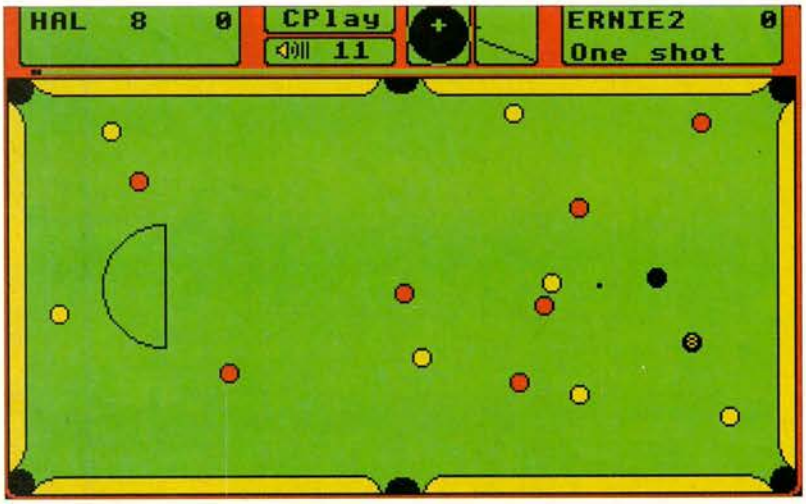
At the beginning of the frame, neither player is obliged to pot any particular colour. As soon as a colour is legally potted, you must stick to it. Where both colours have been potted in one shot you must nominate the colour by pressing R or Y.

The object of the frame is to be first to pot all your own colours and then the 8-ball. The usual situation is to have just one attempt at a pot. If you succeed you continue otherwise the play goes to your opponent. Sometimes you will be entitled to more than one attempt, for instance on a foul move.

How you commit a foul depends on your status before the shot took place. It is always a foul if the cue ball fails to strike any balls or if it is potted. Unless you have a free shot, it is also a foul to pot an opponent's ball, strike your opponent's ball first or strike the 8-ball first.

Play starts with a break, the ball being placed in the D and hit into the pack. A snooker exists in Q-Master when the player cannot strike any of his own balls face on. The named player is entitled to place the cue ball in the D by pressing D when setting up a shot.

The referee instructs you as to the person taking the shot and what sort of shot is available.



● *Ernie gets two goes here*

Main referee messages

Free shot B	A bad break.
Please rebreak	The 8-ball was potted from a break. This is not a foul.
One shot	The player can have one unsuccessful attempt at a pot before the opponent has control.
Two shots	The player can have two unsuccessful attempts at a pot before the opponent has control.
Free shot	The player can have two unsuccessful attempts at a pot before the opponent has control. The first shot can strike any ball on the table, pot an opponent's ball (but not the 8-ball) or both.
Free shot S	A foul has left the named player snookered. A snooker exists in Q-Master when the player cannot strike any of his own balls face on. The named player is entitled to place the cue ball in the D by pressing D when setting up a shot.
Wins frame	The 8-ball has been potted whether by the player legally or illegally by the opponent.
Wins match	The player has won more than half the number of frames in the match.

Setting up for a shot

First you have to set the direction of the shot, a cross appears that show the direction you'll be sending the ball. To move the direction cross use:

*	up
Z	left
?	down
X	right
Return	Go to second stage
P	Pick up a ball, practice only

From there you need to set exactly how the ball will be played, how much spin it will have. You adjust these using the display in the middle-top of the display, move the cross around on the ball to show where you'll be striking it. To move the spin cross use:

*	up
Z	left
?	down
X	right
Return	take the shot

Cue angle and power can be changed at any time with these keys:

W	increase power
Q	decrease power
+	increase angle
>	decrease angle

The cushions and ball have height which means they interfere with cueing. If the cue angle is over 30 degrees (shown by a small mark on the left edge of the scale) the ball is likely to swerve if struck with side.

When the cue ball appears faint, it means you have picked it up in Practice mode or you have it *in hand*. Move it around using the normal *, ?, Z and X and drop it by pressing Return.

Wanna sell some software?

Acorn Computing – the only newsstand magazine continuing to support your BBC Micro/Electron – is always on the lookout for good quality software to feature on the 8-bit subscription disk.

If you think your program has got what it takes just send it on disk to:

BBC Disk Submissions, Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

Don't forget to include a declaration stating the material is:

- All your own work
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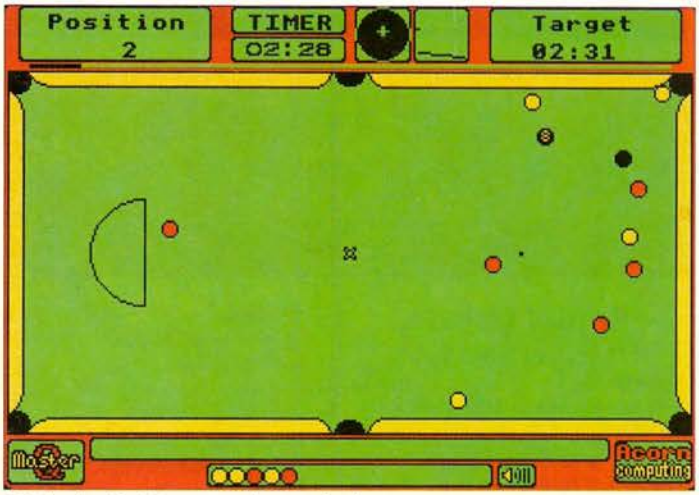
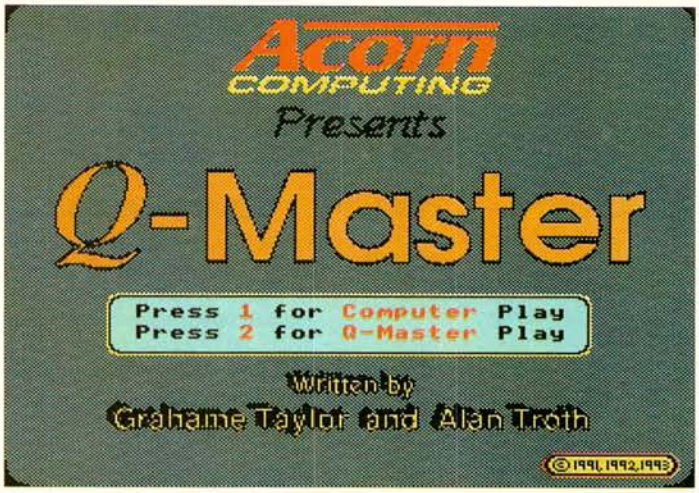


● *I don't think I can pot the rest in time*



● *Choose 2 for a wide selection of options*

Unification: The next generation

ARCHIVING, in computing terms, originally started life as a process used on larger computers to relieve their main backing store. As it made little sense to keep infrequently used files on expensive immediate store, the files in question were transferred on to an inexpensive medium and kept off-line.

The archiving software, storage capacity, processing power and fast media prices have all evolved. Nowadays, when somebody mentions archiving they tend to mean the process of combining a number of separate files into a single monster and compressing it in some way.

On a BBC Micro this may seem a little pointless. Few people use hard disks, the usual reason for adopting archiving, floppy disks are rarely in short supply and, these days, 5.25in disks are almost given away by some companies. So, why?

Obsession. If, like me, you've got more blank disks than you'll ever manage to fill, but still persist in cramming everything into the smallest space possible, archiving is for you.

The archiver

The two listings this month provide the combining part of an archiver. The compression part, we already have.

Archives can be made in two ways: Compress the files and then combine them, or, the method that I prefer – and the one that preserves the load and execution addresses – combine first, compress later.

Running either utility, produces a prompt for the source files. For Listing I, the archiver, this will be a list of filenames separated by spaces to archive and for Listing II, the dearchiver, the name of an archive.

At this point, the dearchiver starts reconstructing the files. It will prompt for source and destination disks, and apart from this, the process is fully automatic.

The archiver will request an object filename, the name to call the archive, and will continue in same way, copying files and prompting for disk changes.

Star commands can be given at the filename prompts in both programs.

With both sliding dictionary and Huffman encoding, what can be expected compared to other systems depends very much on the type of data and the quality of the other software.

Almost certainly screen pictures and clip art compressed with the commands will be smaller than the output from run-length encoding systems. Beyond this, the 8-bit micros have very few compression programs and of those that exist none are widely used.

On larger machines, compression is commonplace, and some of the most effective systems are freely available. PKWare's PKZip and Gnu's GZip, both use a technique which is very similar to the *Slide/Huff* combination. They use a 32k buffer instead of the 256 bytes of *SlideC* and have a dedicated link between the sliding dictionary and Huffman encoder.

Better performance

In all but the most insignificant cases these systems will perform better. The difference is greatest when repeating sections occur but not within a 256 byte range. Text files are a good example. Repeated words in close proximity are discouraged and the benefits of words like *the, and* and so on, are minimal.

Although compression systems are very effective and can reduce the load on a disk, extra problems are introduced. Disks, like any form of storage, are not perfect and very occasionally forget a bit or two.

This is rarely significant if the file is byte aligned, one wrong letter in several thousand words is hardly a problem. Most compression techniques don't rely on single byte alignment, Huffman encoding has almost random alignment, and the sliding dictionary uses multiple byte sequences.

The decoder may fall over at the bit error and incorrectly decode the rest of the file. The moral is that, although the likelihood of error is tiny, use compression wisely. Files which are very important are probably best kept uncompresse, and backed up in lots of different locations.

Reference

Gailly J., "algorithm.doc", distributed as part of the Gnu GZip system, available from any GNU ftp site.
"Appnote.TXT", distributed as part of PKZip 1.93a, available by ftp from ftp.cso.uiuc.edu:/pc/exec-pc/pkz193a.exe which is a self-extracting archive for PCs.

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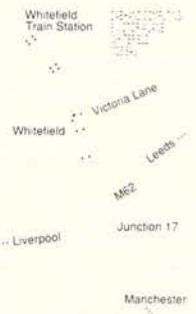

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SolidsRender	Silicon	£77
SolidTools	Silicon	£204
– education price		£194
SongBook, age 3-10	EMR	£24
Sound Engineer, age 12+	EMR	£59
Sound-FX Maker	CIS	£POA
Sound-FX Maker & Photopia	CIS	£POA
Sounds & Rhymes	Xavier	£29
Spark	David Pilling	£5
SparkFS	David Pilling	£20
Sparkle	Morley	£59
Special	ICS	£10
– site licence		£30
Speech!	Superior	£18
Spelling week-by-week	Chalksoft	£20
Spex	ExpLAN	£98
Spheres of Chaos	Matt Black	£19
Splash, age 7-11	Sherston	£19
Splice	Ace	£34
Split an Image, age 7-16	Sherston	£16
Spoken Word	Wyddfa	£16
Spooler	Computer Tutorial	£9
Sporting Triangles	CDS	£19
SportsDay	Selective	£20
SportsPeople	Selective	£20
SpriteEd	Computer Tutorial	£17
SpySnatcher	Topologika	£12
Square Route	Computer Eyes	£16
Squirrel 2	Digital Services	£130
– site licence		£545
Squirrel C Developer's Toolkit	Digital Services	£96
Starspell Plus	Fisher-Marriott	£19
StartWrite	Icon	£55
StockPack	Topologika	£37
StoryBook, age 3-10	EMR	£59
StrongED	Stallion	£22
Studio24Plus Version 2, age 11+	EMR	£149
Studio24Plus Version 3, age 12+	EMR	£210
Stunt Racer	Fourth	£25
SUMthing	Resource	£19
SuperDump	Silicon	£20
Superior Golf	Superior	£14
SuperPlot	Silicon	£20
Swiv	Krisalis	£19
TABS	ExpLAN	£95
Talisman	Minerva	£8
Talking Pendown	Longman	£54
Talking Pictures	Wyddfa	£16
Target Maths	Triple R	£15
Technodream (Nevryon 2)	Superior	£19
TechWriter	Icon	£159
Thinklink	Xavier	£29
ThinkSheet	Fisher-Marriott	£38
Thundermonk	Minerva	£11
Tiles	Brain Games	£16
Timeshare	Fisher-Marriott	£19
Timetabler	Minerva	£549
Time Traveller, KS2	ESM	£37
– Britain Since the 1930s, KS2		£30
– Expansion, Trade and Industry, KS3		£36
– Making of the United Kingdom,KS3		£36
– Medieval Realms, KS3		£36
– The Victorians, KS2		£30
TinyDraw/TinyPuzzle	Topologika	£34
TinyPuzzle	Topologika	£24
Titler	Clares	£115
Toolkit Plus	Clares	£36
Tools Graphics, drawfiles	Micro Studio	£23
Topographer	Clares	£61
Touch Type	Iota	£38
Tower of Babel	Cygnus	£17
Trace	David Pilling	£5
Tracer	Midnight	£46
Tracker	Leading Edge	£37
Transport, drawfiles	Micro Studio	£25
Turbo Type	CIS	£POA
Turbo Type, Sound-FX Maker, E-Numix	CIS	£POA
Tween	Ace	£35
Twin World	UBI Soft	£14
TWO (Task and Window Organiser)	ICS	£10
– site licence		£30
TypeStudio	RISC	£38
Utility Disc 1	Data Store	£8
Utility Disc 2	Data Store	£13
Utility Disc 3	Data Store	£7
Utility Collection	Data Store	£21
Vector	4mation	£75
Victorians, age 7-11	Sherston	£POA
View»Mac 3	Human	£65
– Arc/Mac Cable	Human	£24
Viewpoints, age 7-11	Sherston	£37
Virtual Golf	Fourth Dim	£25
Visual Backup	Dabhand	£39
Vox Box	Clares	£44
Waiter	Digital Services	£35
Waterloo (not OS 3.1)	Turcan	£19
Whale Facts	Topologika	£31
Wordbank	Topologika	£25
Words and Pictures	Chalksoft	£18
WordWorks	CC	£38
Wordz	Colton	£85
World Geography Maps, draw	Micro Studio	£23
WorldMaker, KS3,4	ESM	£51
World Map Study, KS3,4	ESM	£61
Worldscape	Leading Edge	£17
World Wildlife, sprites	Micro Studio	£16
Worra Battle	Oak	£15
WorraCAD	Oak	£79

POSTAGE IS FREE
FOR CASH CUSTOMERS IN THE UK

ICS
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Xenon 2	GamesWare	£21
Yacht 2	Computer Tutorial	£49
Yacht 7	Computer Tutorial	£94
Zarch	Superior	£14
Zelanites (not OS 3)	Micro Power	£15
Zool	Gremlin	£19

HARDWARE

SCANNERS, DIGITISERS . . .

ArcScanner including Epson GT-4000	Clares	£1660
Colour Converter	Lindis	£145
FaxScan	Spacetech	£94
GreyHawk	Wild Visiion	£98
Handipad	TechSoft	£193
Hawk V9 MkII	Wild Vision	
– standard		£199
– hardware dithered		£259
HiVision Digitiser Colour	HCCS	
– A3000 External		£137
– A3000 Series / A4000 Internal		£124
– A5000 / 300 / 400		£124
iMage (Sharp JX-100)	Irlam	
– for A5000		£490
– for other computers		£589
Image Scanner	Iota	£383
– Colour Upgrade Kit	Iota	£239
– Fast Parallel Card	Iota	£98
i-Scan 200	Irlam	£539
i-Scan 400	Irlam	£589
Pineapple Colour Video Digitiser	Pineapple	£195
– A3000 boxed	Pineapple	£230
ProImage (Epson GT6000)	Irlam	
– for A5000		£989
– for other computers		£1089
Scan-Light A4	CC	£277
Scan-Light 256	CC	£185
– A3000 External	CC	£190
– A3000 internal	CC	£190
Scan-Light Professional	CC	£565
– as above + SCSI interface	CC	£699
Scan-Light Video	CC	£208
Spectra	RISC	
– A3000 Series / A4000 Internal		£545
– A3000 External		£555
– Archimedes / A5000		£545
Vision Digitiser	HCCS	
– A5000 / 300 / 400 Mono		£48
– A5000 / 300 / 400 Colour		£76
– A3000 External Mono		£60
– A3000 External Colour		£89
– A3000 Series /A4000 Internal Mono		£48
– A3000 Series / A4000 Internal Colour		£76

MEMORY . . .

Fitting extra unless otherwise stated
† Fitting fairly easy ‡ Fitting needs expertise

A3000 2 Mb Upgradable †	Atomwide/IFEL	£58
A3000 4 Mb †	Atomwide/IFEL	£120
A3010 1-2 Mb		£39
A3020 / A4000 2-4 Mb †	IFEL	£POA
A310 2 Mb Upgradable soldered ‡	IFEL	£94
– as above + MEMC1a		£119
– as above + MEMC1a + fitting		£149
A310 4 Mb soldered + MEMC1a ‡	IFEL	£159
– as above + fitting		£189
A5000 2-4 Mb †	Atomwide	£85
A5000 2-8 Mb including fitting	Atomwide	£500
A5000 4-8 Mb including fitting	Atomwide	£391
A540 4 Mb †	Acorn	£238

COMPUTERS . . .

A3010 Action Pack	Acorn	£335
A3010 Learning Curve System	Acorn	£599
A3020 FD System	Acorn	£650
A3020 HD60 System	Acorn	£775
A4 2M FD System	Acorn	£1350
A4 4M HD60 System	Acorn	£1650
A4 Battery Pack	Acorn	£53
A4 Shoulder Bag	Acorn	£37
A5000 2M HD80 Multiscan System	Acorn	£1225
Pocket Book	Acorn	£169
– Class Pack		£1599

For ordering details please turn to page 3

ICS

051-625 1006

PRINTERS . . .

ArcLaser 300-6	Calligraph	£895
ArcServer 300-8	Calligraph	£985
Bubble Jet BJ-10sx	Canon	£187
Bubble Jet BJ-10sx + TurboDriver	Canon/CC	£219
Bubble Jet BJ-230	Canon	£315
Bubble Jet BJ-300	Canon	£325
Bubble Jet BJ-330	Canon	£380
Bubble Jet BJC-600 + TurboDriver	Canon/CC	£535
Bubble Jet BJC-800 + TurboDriver	Canon/CC	£1374
DeskJet 510	Hewlett-Packard	£275
DeskJet 500C	Hewlett-Packard	£375
DeskJet 550C	Hewlett-Packard	**£455**
Laser Direct HiRes4 + Impression	CC	**£799**
– 250-sheet Paper Cassette		£99
Laser Direct HiRes8 + Impression	CC	**£1050**
Laser Direct HiRes Board	CC	£325
New toner cartridge for Canon LBP-4		£59
New toner cartridge for Canon LBP-8		£75

MISCELLANEOUS. . .

386 PC Expansion Card 25 MHz	Aleph One	
– 1 Mb		£POA
– 4 Mb		£POA
486 PC Expansion Card	Aleph One	
– 1 Mb		£POA
– 4 Mb		£POA
4-slot 4-layer Backplane	IFEL	£52
5315 Monitor	Aydin	£425
A300/400 Fan kit	ICS	£15
A3000 Expansion Box	Wild Vision	£135
A310 RISC OS Carrier Board ‡	IFEL	£18
A5000 Fitting Kit for second hard disc	ICS	£15
A5000 105 Mb Removable Disc Kit		£POA
– Extra 105 Mb Disc		£POA
AnDi Oddule	Baildon	£39
Arckey Function KeyStrip Holder	ICS	V0 £3
– pack of 4		V0 £10
ArcNET	ACS	£69
ARM3 ‡	Aleph One/IFEL	£165
Arm_Stick	Arm_Tech	£28
ColourBurst	State	£374
ColourCard	CC	£225
– A3000 External	CC	£225
Dongle Dangle with screw fittings	ICS	£6
Fan filters (pack of 10) (not A5000)	ICS	£6
FaxPack	CC	£289
Floating Point Accelerator (A5000 + A540)	Acorn	£93
Floppy Discs, 10 × 3½" High Density		£10
G16 True Colour Card	State	£258
G8 Plus Accelerator	State	£238
HiPoint Mouse for A4	Genius	£49
I²C Adaptor	Baildon	£10
I²C SWI (enhanced IIC_Control)	Baildon	£15
– bought with AnDi Oddule		£5
Microlin fx Pocket Fax Modem	Pace	£179
Micro Mouse	Clares	£26
Monitor Stand for A3000	ICS	£21
Mono/SCSI	Atomwide	£48
Podule Case for A3000	HCCS	£16
Power Pad (Dual)	GamesWare	£34
Power Pad (Single)	GamesWare	£25
Printer Port Sampler	Leading Edge	£42
Printer/SCSI	Atomwide	£74
Publishing Pack	CC	£475
Revolution CD-ROM	Morley	£295
Revolution Pro (for SCSI system)	Morley	£435
RISC OS 3 Upgrade	Acorn	£45
Seal 'n Type spill-proof Keyboard Covers		
– Archimedes / A5000	Kador	£14
– A3000	Kador	£14
TouchWindow	Lindis	£234
Whisper Fan Quietener (for A300/A400 series only)	ICS	£15
Wizzo IDE Filing System on rom	ICS	
– Wizzo4 for A4		£POA
– Wizzo5 for A5000		£39

Do you

use an A5000?
need to back-up data quickly?
need to carry data from one computer to another?
wish you could lock important data away easily?

Could you use 105 Mb floppy discs?

We've got some. They should really be called removable hard discs, but the difference is academic. Just install one of our SyQuest kits in your A5000 as though it were a second floppy disc drive. Now you can use 105 Mb removable discs as if they were fast floppies.

Removable discs cost about the same per megabyte as traditional floppies. Our complete package includes a drive, a filling kit and one 105 Mb disc, formatted and tested. No soldering is required.

Each ICS kit also contains a special version of Wizzo -- our own IDE filing system on rom. Acorn's filing system does not support removable hard discs (you would need to reset the machine every time you removed a disc).

Only Wizzo supports the SyQuest option.

WIZZO (it's magic)

And gives you disc partitions, password protection, and the ability to access more than 512 Mb of storage.

WIZZO SYQUEST COMPLETE PACKAGE £449
ADDITIONAL 105 MB DISCS £69 EACH

Wizzo5 owners: please return your rom in its original packaging and deduct £15.

HOW TO ORDER

VAT: Zero-rated items are marked V0. UK customers please add 17.5% to all other prices. EC customers outside the UK (including BFPO) please do the same unless you are VAT registered, in which case quote your international VAT number. Ours is GB 595 7258 84.

CARRIAGE IS FREE WITHIN MAINLAND UK IF YOU PAY ON ORDERING.

Overseas carriage: If you are paying by credit card we will add airmail and insurance at cost. Otherwise please add £6 (Europe) or at least £12 (elsewhere) for each software item and send a pounds sterling bank draft payable at a London clearing bank, or Eurocheques for not more than £100 each.

Credit cards are welcome. We do not charge your account until your order is fulfilled. Your name and address must be as known to the credit card company. If you are leaving an order on our answering machine please include your telephone number, the expiry date of your card, and your calculation of the total payment due. We will make no charge for credit card commission unless we have informed you first.

Official orders are welcome from UK government and educational institutions. Payment is due in 14 days. Invoices are subject to carriage and late payment charges.

Site licences are available for most products. Please check our prices.

All products, prices and specifications are offered in good faith and are subject to change without notice. We process all orders immediately, but suppliers do sometimes keep us waiting. Goods are guaranteed but we do not supply them on approval. Returns and cancellations can only be accepted by prior agreement and there may be a charge to cover the costs involved.

AUTHORISED ACORN DEALER

ICS (Ian Copestake Limited)
Dept AC15, 1 Kington road, WIRRAL, Merseyside, L48 5ET
Tel: 051-625 1006 Fax: 051-625 1007

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LICENSED CREDIT BROKER

The proof of the pudding

Steve Turnbull explores programming to discover whether it's art or artifice

IT'S possible to study a subject called Computer Science – I know, I did. However, the most important thing I've learned since then is that if there's one thing Computing ain't, it ain't a science.

Of course, there must be some areas that are more scientific than others: The manufacture of chips is fairly scientific, isn't it? Well not really: We can say that you take a bit of this, add a bit of that, push some electrons through it and, bingo, something interesting happens. Except that sometimes it works better than others.

In theory you should get the same result each time, but manufacturing introduces variations of results so some chips work slightly differently than others but within defined limits – any are outside that limit are rejected. Of course, this is engineering, it's: *Yes it'll work, no it won't work and well it will probably work.*

Moving up in the hierarchy of computers we come to the stage where things get linked to build the hardware.

Here surely we have a science? If you take a bunch of chips and other hardware with certain characteristics, throw them together in a certain way you'll get a certain result, every time.

Of all the aspects of Computer Science this is probably the most scientific because without the necessary certainty that the machine *will* work there'd be no point in building computers at all.

Assuming all your components are within the prescribed limits, each machine that comes along will behave the same, in a broad sense. There will be differences, after all the chips are different, but without going into extreme detail you won't see any variation.

Now we come to software. Let me tell you there are tomes upon tomes written on the subject of the mathematics of programming. It's quite abstruse and does not really have much bearing on what programmers actually do.

This area is not a science, not by a long way.

The Holy Grail of Computer Science is *Program Correctness*. How can you ensure that a program that has been written actually does the job it is intended to do, *scientifically*?

This is one of those academic subjects where hundreds of researchers spend thousands of hours perspiring over hot computers and drinking infinite cups of coffee, hoping for that little spark of inspiration that will place them at number one on the leaderboard.

But should any one of them succeed in defining a scientifically repeatable system for proving the correctness of any computer program that has been written, is being written or that ever will be written – they'll all be out of a job.

However, they can rest easy in their academic chairs because there's little chance of any of them succeeding. Programming is not a science, it's an art – in the same way that cooking is an art.

Anyone can open up a recipe book and, assuming they're capable of following instructions and understand the words, produce a meal. The quality of the meal will be dependent on their personal skill, the tools they have and the ingredients they're working with.

If they have no skill it will probably be satisfying but lacking in lustre. With the wrong tools you have to get by, it's more efficient to beat an egg with a whisk than a fork, but if you only have a fork you can still do it. Plus you can make moussaka with potatoes but aubergines are better.

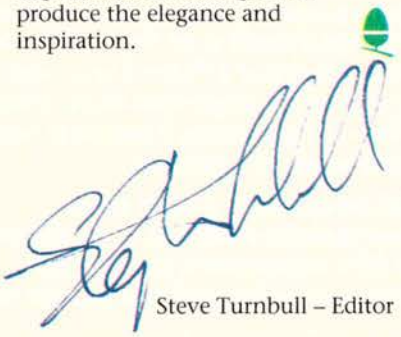
Every skill has its techniques and procedures which, if known, make the job easier: A cook might know a trick for separating egg yolks from the white, a programmer might know a method of performing division that's most efficient for the task in hand.

We can take this comparison a stage further because extremely skilled cooking takes the subject into the realms of an art form. Well, it's true for programming too, although it usually takes another programmer to appreciate it.

You may hear programmers talking of *elegance* in some aspect of a program or a technique, well that's the art of programming. It's a method or implementation that has such high quality that it's admirable.

Cooking will never be a science because, though anyone can follow recipes, it involves creativity on the part of the cook to make something special.

It's just the same for programming because, although anyone can write a program, it requires that certain spark to produce the elegance and inspiration.



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ICS WIZZO (it's magic)

051-625 1006

The ideA range

ICS was the first company to offer IDE products for Acorns back in 1990; now they are the standard choice for new Acorn computers. Building on three years' experience we have continually improved our IDE filing system. It now offers the highest level of RISC OS compliance, and compatibility with at least 45 different hard discs tested by us. Can any other supplier make this claim?

Our IDEFS abolishes the RISC OS limit of 512 Mb, and offers extra features such as password protection, background operation, disc partitioning, and power saving (which allows some discs to stop spinning when idle).

Partitions can have different levels of protection. Family or pupils can access some of your files while you keep others safely out of their reach. Or you can simply protect the whole disc (reformatting is not required for this).

Our hard disc upgrade kits are based around two internal interfaces at present: IDEA3IN for the A3000 Series, and IDEARCIN for the A300/A400/A500 Series. All kits are designed to a high standard and include all the parts you will need.

IDEA3IN upgrade kits include an I²C expansion socket as standard. They come with a 2½" disc already attached, and are easy to fit once you have opened up your computer. You may safely take no notice of rumours still being spread that internal upgrades might not be safe in an A3000. We have adhered carefully to the guidelines in Acorn's technical specifications, and in three years have never come across a problem.

IDEARCIN upgrade kits provide a fast 16-bit link all the way from the computer to the hard disc. They can even be fitted to an A310 without a backplane – quite a cost saving. A second hard disc can easily be added later if required.

Interfaces and hard discs can also be bought separately. By shopping around you may even save a few pounds. But beware: not all IDE hard discs work with all interfaces, and if you have a problem it may be difficult to decide who should put it right. We recommend buying a complete kit from one source.

WIZZO is the name given to our IDE filing system when it is supplied as a single rom chip. Wizzo5 is for the A5000, and Wizzo4 is for the A4. You should buy a Wizzo if you need password protection or wish to use larger hard discs. (Wizzo4 has been delayed slightly – we are adding a feature to ensure compatibility with possible future A4 upgrades).

A Wizzo rom by itself will only produce a slight speed improvement. If you need speed in an A5000, fit an IDEARCIN interface instead. Up to 60% improvement can then be achieved, but this does depend which hard disc you use so do check with us first.

How to read our ideA product references

A number at the end is the nominal hard disc capacity in megabytes. We usually round this down, so the actual formatted capacity may be higher. All discs have auto-parking. Average access times vary but all are below 20 ms.

All prices shown exclude VAT and are subject to change without notice. The cost to us for hard discs can vary enormously from week to week – not always downwards! Your local dealer can obtain *ideA* products from us or from a distributor.

Archimedes A300/A400/A500 Series Internal Upgrades

Package includes formatted hard disc, ideA interface card, hard disc cradle and fittings, fan kit, replacement multi-purpose LED (power and drive status), manual with fitting instructions. Can be fitted to an A310 without a backplane. If a backplane is used it must be a 4-layer type. Easily fitted by most users.

IDEARCIN 40	£175	IDEARCIN 330	£399
IDEARCIN 80	£205	IDEARCIN 420	£499
IDEARCIN 170	£275	IDEARCIN 540	£650
IDEARCIN 240	£325	IDEARCIN 1000	£925

A3000 Series Fully Internal Upgrades

Package includes formatted hard disc mounted on ideA interface card, manual with fitting instructions. Fully internal, using internal expansion slot. Co-exists with floppy drive and memory upgrades. Fits the new 1992 computers. Easily fitted subject to Acorn warranty stipulations.

IDEA3IN 40	£175
IDEA3IN 80	£250
IDEA3IN 120	£299
A3000 FAN KIT (not usually required*)	£19

**Only required if the computer has been fully upgraded, e.g. with maximum memory AND Econet AND an external podule.*

Separates for hard disc upgrades

We can only guarantee the performance of ideA interface cards with hard discs we have tested ourselves, so please check if in doubt. If you are buying a hard disc for an A5000 please say so. If you intend to fit the disc in addition to an existing one we need to know the make and model of the existing disc. Acorn's interface does not support all makes of disc, and some models will work as a second disc but not on their own.

Hard discs on their own are listed as, for example, IDEA 80. An S at the end indicates a 2½" disc.

IDEARCIN (Archimedes Interface for Internal disc(s))	£60
IDEA3IN (A3000 Interface for Internal disc)	£75
ARCHIMEDES INTERNAL CRADLE KIT	£15
ARCHIMEDES A300 / A400 SERIES FAN KIT	£15
4-SLOT 4-LAYER BACKPLANE	£52
POWER CABLE FOR SECOND HARD DISC	£5
A5000 SECOND HARD DISC FITTING KIT	£15

IDEA40	£125	IDEA330	£349
IDEA80	£155	IDEA420	£449
IDEA170	£225	IDEA540	£600
IDEA240	£275	IDEA1000	£875

IDEA40S	£115
IDEA80S	£190
IDEA120S	£239

WIZZO IDE Filing System on rom

Package includes rom, manual and fitting instructions. Compatible with RISC OS 3.0 and 3.1. Allows up to four logical partitions over two physical drives. Each partition appears separately on the icon bar and can have different password protection. Makes use of existing Acorn hardware for maximum compatibility, but works with a wider range of hard discs. Security breaches using ADFS can be prevented. Can be fitted easily by a competent user.

Available now: WIZZO5 for A5000	£39
Available soon: WIZZO4 for A4	POA

Quantity discounts available • Dealer enquiries welcome

ICS (Ian Copestake Limited), Dept AC15, 1 Kington road, WIRRAL, Merseyside, England, L48 5ET

Direct bundling

COMPUTER Concepts (0442 63933) have cut the price of their LaserDirect range of printers with the HiRes4 now at £799 and HiRes8 at £1,099. This coincides with the launch of the RISC OS 3 version of the software which will now be supplied as standard. Free upgrades are available for existing owners of Qume, HiRes4 and 8 Laser Direct systems.

The new software can handle rotated text and works with Acorn's !Printers application. It can also print separations for suitable applications and advanced PostScript-like control over half-tone screens.

With every laser printer sold between now and Christmas, Computer Concepts are including a free copy of Impression II which can be upgraded for £29 to Impression Publisher when this is released early in the New Year.

Wild images

LONGMAN Logotron (0223 425558) and Wild Vision are packaging ScanLight Video 256 and Revelation imagePro together for £299. The two products will be available in this special package until the end of the year.

Going Dutch

IBIS launched the Dutch version of 4Mation's latest release, Flossy the Frog, at the Big Ben Show in Hardewikj, Holland recently. This is 4Mation's first release in Holland and is particularly fitting as Flossy's artist is Hans Rijen who lives and works in Amsterdam.

Shoehorning

PTW Software (0329 281930) are distributing a new compression system called KleinFS which retails for £17.95. This system uses Acorn's Squash module so can be read by anyone with RISC OS 3 regardless of whether or not they have a copy of KleinFS.

PTW are also following version two of their GCSE Chemistry pack with an A-level package. This will consist of a database with full search access as well as support materials and worksheets.

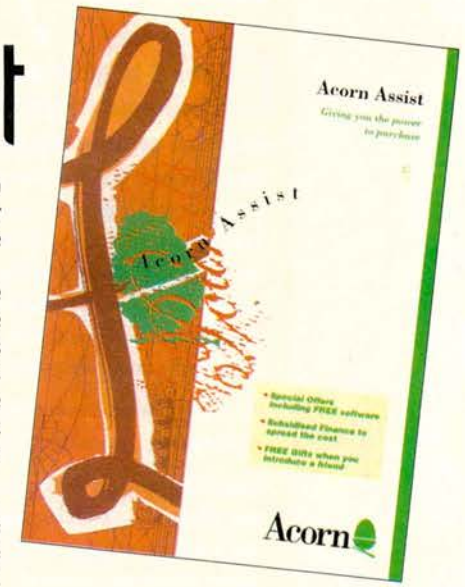
Acorn assist

A NEW initiative has come from Acorn themselves this month in the form or Acorn Assist, a purchasing scheme aimed primarily at teachers.

As well as being a subsidised finance scheme it allows participants to acquire free software and collect points towards free gifts when they introduce friends and colleagues. The scheme covers the entire Acorn range from the Pocket Book to the A5000 and is valid until the end of the year.

Acorn's Peter Talbot commented: "Our research shows that two thirds of teachers now use computers as part of their everyday classroom activity. Many of these would like to be able to prepare or catch up on work in the comfort of their own homes".

If you are interested in the scheme, a free hotline is available on 0800 400800.



As an example of the costs, an A4000 would be £999 including VAT plus a free copy of Advance. You could pay over two years for a 10 per cent deposit and £42.72 each month.

Reductions on PC access

ACORN (0223 254254) are cutting costs again this month with £50 reductions on their PC cards for the A3020 and A4000 – now £225 for the 386 card and £425 for the 486.

The software which integrates the cards into RISC OS have been improved and you can get a free upgrade by returned the original Acorn PC Card software disk and Windows driver to PC Card Upgrade, Customer Services, Acorn Computers, Acorn House, Vision Park, Histon, Cambridge CB4 4AE.

These cards give you a 25MHz 80386SX processor and a 1Mb zero wait-state memory upgradable to 4Mb or a 486SLC chip and 4Mb memory. Video drivers are supplied enable the 32-bit machine to be harnessed as a graphic accelerator to its onboard PC.

Software parties get full marks

TEN out of Ten Software (0742 780370) are offering you a opportunity to make money if you hold a software party. Held along the lines of clothes and kitchen goods parties, this agency scheme is unique.

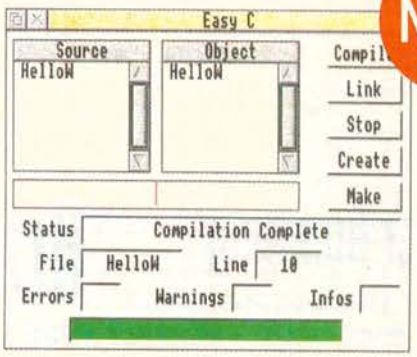
Agents arrange free trials of any of Ten out of Ten's products and receive at least £5 for every order generated from the trial. Commenting on the scheme, Steve Botterill said: "We are the only company in the world to have given over 5,000 free trials of the full commercial product and achieved a 95 per cent success rate. We'd like others to have the chance to share in our success by giving away free agencies".

The Agent's packs contains a boxed set of demonstration disks and manuals as well as details on bulk discounts and school licence prices.

showcase software

NEW

Easy C



Easy C is a full development system designed for programmers wishing to learn or develop their skills in C.

Easy C uses a WIMP front-end to drive the compiler and linker, so no complicated command-line sequences need to be learnt. C programs may be compiled, linked and run using one single mouse click. It is ideal for beginners, but the full specification ANSI compiler (not validated) allows it to handle very substantial programs.

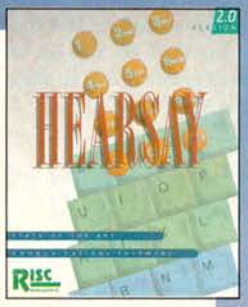
For more advanced programmers, Easy C contains an integrated Make facility and ARM assembler.

Easy C is supplied with a comprehensive user guide including a C language tutorial for beginners and a full description of all ANSI and RISC OS library functions provided.

- Easy-to-use WIMP front-end
- ANSI C compiler generates fast ARM code
- Object code linker for linking programs
- Automatic generation of Make files
- Supports all standard ANSI functions
- Library of basic RISC OS functions
- Integrated ARM assembler
- Facility to create and maintain libraries
- Integrates with editors using 'Throwback'
- FreeWare WIMP library DeskLib supplied

Easy C £49

Hearsay



Hearsay II is the most powerful general purpose communications package available on Acorn systems.

This superb package is packed with powerful features, yet remains both easy-to-learn and intuitive to use. Now the latest version has been further enhanced with an improved user interface and 3D-style dialogue boxes throughout.

- VT320, VT102, VT52 and ANSI
- Campus 2000, Viewdata, Minitel
- Tektronix 4107 graphics
- Supports RISC OS printer drivers
- Call logging
- Xmodem, Ymodem, Zmodem, Kermit
- Background file transfers
- Powerful script language
- Number directory with auto logon
- Macro processor & definable keyboard

Hearsay £75

Upgrade from Hearsay version 1, price £35.

TypeStudio

TypeStudio is the complete text manipulation package, ideal for producing high quality adverts, posters, logos, etc.

Text can be made to flow along lines and curves, or moulded inside shapes. A wide range of special effects give almost limitless design possibilities.

- Flow text along paths
- Mould Draw files to shapes
- Wall, floor, graduated shadows
- 3-D, mirror, slant & plinth
- Save in TypeStudio/Draw file format
- Supports RISC OS printer drivers
- Copy, rotate and magnify
- Import Draw files for moulds

TypeStudio £45

Supplied with 7 fonts and user guide with worked examples.

RISC developments

RISC Developments Limited

117 Hatfield Road, St. Albans, Herts AL1 4JS Tel. (0727) 840303 Fax. (0727) 860263

Please add £2.70 carriage (£1.70 for TypeStudio) and VAT to prices. Please phone for site licence & educational prices.

Sounds familiar

DYNAMIC EMR (0702 335747) have a host of new musical releases for the 32-bit machines this quarter in addition to new hardware interfaces produced in conjunction with HCCS.

MicroStudio 2 has been re-written incorporating 24-track Midi/internal sound software with a keyboard learning system. There is also a new version of Desktop Scorewriter now playing up to eight score parts with an extra Alpha font allowing fast keying of music data using the computer as a music typewriter.

Music Player 3 has been created for a new EMR/Yamaha package called Hello Music. Once installed, any Midi format file can be played instantly by simply double-clicking on EMR song files, EMR or Armadeus sound samples.

File formats can also be interchanged and re-saved with program numbers for different Midi instruments.

EMR's music library now has presets to match the latest GM format while maps in Studio24Plus version 3 will automatically change voice presets and drum kits to suit other instruments.

The Hello Music Midi system was in evidence during the Education Day at the Classic Music Show '93 on October 22 at the Business Design Centre, Islington.

The musical side of multimedia is really coming into its own this year and EMR have added direct disk recording to version 3 of their Studio24Plus. This has been achieved using the new range of Midi/Sampler interfaces developed with HCCS' Ultimate range. An optional plug-in mini podule for dual Midi ports offers 32 channels with a top-mounting 8-bit sampler card.

EMR support more than one Midi port on the 32-bit machines with a four port Midi4 interface running via Studio24Plus. The sampler has software control of input and variable sample rate up to 50kHz.

Oops

HOLDFAST who market the Joypad – featured in last month's news column – can be contacted on 0454 411126 or at Holdfast Computing, Strode House, Strode Gardens, Alveston, Bristol BS12 2PL.

Multimedia power for all

WILD Vision and partners Computer Concepts have teamed up with Eidos to produce a new and revolutionary real-time movie compression system for only £299.

By compressing video in real-time the process of recording film and making a !Replay movie moves away from the very large and fast hard disk system reducing costs and speeding up production.

This solution comprises an Eagle 24-bit real-time colour digitiser offering a grab facility of 24-bit and 15-bit colour graphics complementing the new specification of ColourCard graphics accelerator.

Resultant 8-bit sprites use the hardware dithering first seen in version two of the Hawk V9. In addition it acts as a greyscale digitiser grabbing images as well as acting as a Replay movie capture board, stereo audio sampler and playback board and Midi interface.

The full Eagle package has six pieces of software including !ARMovie and AudioWorks.

Commenting on the development, Wild Vision's (091-519 1455) MD Peter Wild said: "Until now multimedia has been not much more that a rather elusive and expensive technological concept.

"By pricing our new products at a level which is accessible to a wide audience we are going a long way towards dispelling all the hype.

CD-Rom bonanza from Cumana

CUMANA (0483 503121) have launched two special CD-Rom packs for the home. The first, Family Fun/Education Pack, contains the latest 300 series CD-Rom drive and four disks: Dictionary of the Living World, Creepy Crawlies, Image Warehouse and Grooves. The price is £499 including VAT – a saving of over £450 on the recommended retail prices.

The second pack contains two extra CDs – The World of Number: Who stole the decimal point and the Time and Sunday Times on CD-Rom. This pack costs £599.

More and faster with quadraspin

CD-ROM hardware has made it into Computer Concepts' (0442 63933) portfolio with the inclusion of the Pioneer DRM-604X CD-Rom drive.

The drive is aimed at both schools with networks as well as high-end professional users. It uses *quadraspin* technology to rotate the disk at four times normal speed to achieve a reported 614k per second transfer rate making it fast enough to access data over a network. The six-disk magazine and autochanger means that the drive does the job of six.

The DRM-604X is a multi-session drive being PhotoCD-compatible as well as able to play standard audio compact disks with audio output to headphones and RCA connectors.

It connects to any 32-bit machine via an SCSI interface and the price, £999, includes Computer Concepts drivers, cables and a copy of the ArtWorks clip art CD.

● *Spot the Blot*

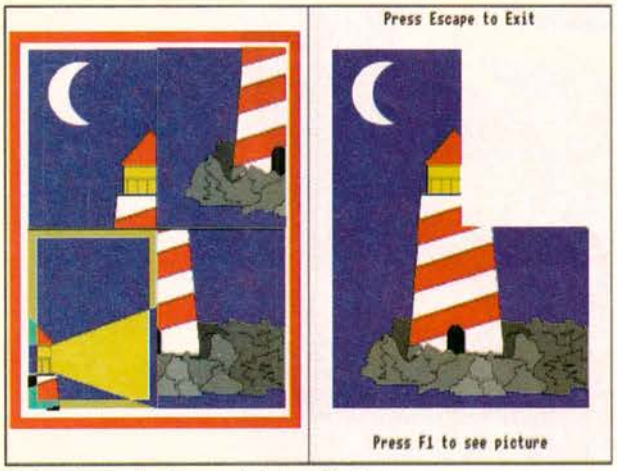
● *Organise your calendar*

Fun and games for all

HS SOFTWARE (0792 204519) have released Lots More Fun and Games for £22.95. The package consists of three games – Gwyn's World, Dataday and Spot the Blot – aimed at National Curriculum Attainment Targets in Maths and English for children between five and nine years of age.

Gwyn tells you where to find the two and three dimensional shapes hidden around his house. In Dataday a time traveller is your guide helping children learn the days of the week and months of the year in sequence using colourful graphics and mnemonics.

Finally in Spot the Blot you must try and find objects which have been reversed or are missing.



● *Opt for a simple puzzle in Jumble Fun*

Jumbled twosome

HONORMEAD (0332 512848) have followed Scribble – their popular art package for pre-school and special needs – with Jumble Fun.

Again aimed at pre-school and special needs, Jumble Fun consists of two levels, Jigsaw and Picture Jumble. The program has been designed to work with switches and touch windows and there are support disks with jigsaws on particular topics. You can also add your own pictures from other applications, scans or digitised images.

Jumble Fun costs £15.95 which includes a site licence.

Diary Dates

Logo Weekend
Date: 5-7 November
Venue: Superchoice Centre, Weymouth
Contact: Dorset IT Advisory Team (0929 405059)

MicroTest Open Day
Date: 7 November
Venue: Cornwall Coliseum, St Austell
Contact: MicroTest (0208 73171)

Dealer Open Day
Date: 21 November 1993
Venue: Kegworth Hotel, Kegworth, Derbyshire
Contact: Selection Computer Services (0332 690691)

CSH Open Day
Date: 27 November 1993
Venue: Westfield School, St Ives
Contact: Cambridgeshire Software House (0480 467945)

Acorn Computing Open Day
Date: 5 December 1993
Venue: Portland Hotel, Manchester
Contact: Acorn Computing (0625 878888)

Online/CD-Rom Information 93
Date: 7-9 December 1993
Venue: Olympia 2, London
Contact: Learned Information (0865 730275)

Bigger and bigger

NEW software house Warm Silence (0865 54382) have released Larger which aims to give you hours of stress-free computing. Larger costs £10 which includes a site licence for 20 machines.

Larger performs several functions at once: Sticky backdrop, virtual desktop facility – enabling a desktop of almost infinite size to be used *pushing* the edge off the screen, application manager, a facility to save the details of the applications which are running and a configurable menu tree.

Etch-a-theft

COMPUTER thefts in the UK alone add up to around £700 million each year. A new security aid has been developed with computers in mind by the Etching Transfer Company (0903 244642).

The process is similar to the one used on cars – a neat identifying mark is etched permanently into a corner of the monitor glass. This can only be removed by replacing the screen making it much less worthwhile for a thief to *sell on*.

The identification mark doesn't intrude on the screen and can be a company name or postcode. The system is quick and inexpensive needing no special skills – a transfer is applied by dampening and applying it to the glass for a few moments.

Costs vary on what you want etched but for an individual postcode the cost is £1 a line for a minimum of three. If you only have one monitor you could use the additional transfers for your television.

Quickly and quietly

SEIKOSHA (0753 685873) have a new printer, the SpeedJET 200, which aims to be quick and quiet for a range of uses. It boasts 50 nozzles, 300x300 dpi and three pages a minute.

It has semi-automatic manual feeding for single sheets, envelopes and transparencies and an optional automatic sheet feeder for 70 sheets for an additional £35.

Seikosha are especially proud of its new *long-life* printhead which can be refilled six times from separate ink cartridges. The price of the SpeedJET 200 is £235.

The Complete Solution

Memory

A310 2Mb	-	P.O.A.
A310 4Mb	-	P.O.A.
A310 8Mb*	-	£399.00
A440 8Mb*	-	£399.00
A410/1 1Mb	-	P.O.A.
A440/1 8Mb*	-	£399.00
A3000 2Mb	-	P.O.A.
A3000 4Mb	-	P.O.A.
A5000 4Mb	-	£89.00
A5000 8Mb	-	£399.00
A3010 2Mb	-	£49.00
A3010 4Mb	-	£149.00
A3020 4Mb	-	P.O.A.
A4000 4Mb	-	P.O.A.

Networking

A400 series cards

10base2	-	£149.00
10baseT	-	£149.00
10base5	-	£149.00
10base 2 + 5	-	£199.00
10base 2 + T	-	£199.00

A3000 series cards

10base2	-	£149.00
10baseT	-	£149.00

Parallel port ethernet

10base2	-	£199.00
10baseT	-	£199.00

Ethernet Repeaters

2-port	-	£210.00

10baseT Hub Box

10baseT hub	-	£199.00

SaferTap Network Wall boxes

Wall box	-	£16.00

SaferTap Network station cables

2.5m	-	£13.50
5m	-	£18.50

10base5 convertors

10base5 to 10baseT	-	£65.00
10base5 to 10base2	-	£65.00
10base5 to FOIRL	-	£199.00

Network software

TCP/IP suite	-	£199.00
Acorn AUN	-	£399.00

Parallel SCSI interfaces

Mono SCSI	-	£49.00
Printer SCSI	-	£75.00
Network SCSI	-	£99.00

Hard Discs

IDE drives - 2nd A5000s

80Mb	-	£149.00
170Mb	-	£209.00
240Mb	-	£259.00

SCSI drives - Internal

170Mb	-	£249.00
345MB	-	£349.00
500Mb	-	£455.00

For external system (case+cables), add £65.00 to the cost of drive.

SyQuest removable drives

44Mb 5.25" (SCSI)	-	£325.00
44Mb cartridge	-	£60.00
105Mb 3.5" (IDE)	-	£399.00
105Mb 3.5" (SCSI)	-	£385.00
105Mb cartridge	-	£60.00

Removable magneto-optical drives

Fujitsu 128Mb drive (inc. one disc)	-	£699.00
Extra 128Mb discs	-	£37.00

2.5" drives

Phone for latest prices and availability on replacement drives for A4 and A3020 computers.

A400 series drive interfaces

IDE	-	£79.00
SCSI	-	£149.00
SCSI Cached	-	£199.00

External hard disk boxes

3.5" Dual Open Front	-	£85.00
3.5" Dual Closed Front	-	£85.00
5.25" Open Front	-	£75.00
5.25" Closed Front	-	£75.00

Internal hard drive fixing kits

SCSI Int. 400	-	£15.00
IDE Int. 400	-	£15.00

Other products

Back planes

2-slot & fan	-	£38.00
4-slot & fan	-	£60.00

ARM3 upgrades

ARM3	-	£109.79
Fitting charge	-	£18.00

Aleph One PC cards

386PC 25MHz (0Mb)	-	£375.00
486PC 25MHz (0Mb)	-	£480.00
387 Co-processor	-	£99.00
1Mb RAM upgrade	-	P.O.A.
4Mb RAM upgrade	-	P.O.A.

RemoteFS

Parallel port	-	£49.00
Serial port	-	£49.00
Single User	-	T.B.A.
Network	-	T.B.A.

RISC OS 3 upgrades

A5000 RISC OS 3	-	£20.00
RISC OS 3	-	£41.70
Header PCB	-	£25.00

P.O.A. - Due to fluctuations in the current RAM market, the cost of memory upgrades is likely to go up, or down! Please call us for the latest prices.

* Prices include courier collection/return in the UK. All prices exclude VAT (@ 17.5%). E&OE

ATOMWIDE

7, The Metro Centre, Bridge Road,
Orpington, Kent. BR5 2BE.
Tel 0689 838852 Fax 0689 896088
Email: sales@atomwide.co.uk

● *You'll need to keep your wits about you in the Haunted House*

● *Not the most pleasant place, even for a Mk II Carnage Inc droid*

Four from The Fourth Dimension

THE Fourth Dimension (0742 700661) are releasing four games for four different genres in the next month. For lovers of flight simulations comes Birds of War which covers air combat from the 1920s with Sopwith Camels galore, moving on to the era of the Spitfire and forward in time to the 1960s and 1990s.

For £34.95 you have the chance to fly 32 famous planes on 192 missions visiting all parts of the globe in all types of weather conditions. All this comes on six disks and you will need 2Mb ram – a hard disk is recommended but is not essential.

There is no password facility but you can flit between eras and combat or reconnaissance missions and choose difficult or easy scenarios. Should you get into real trouble you can always bail out and then replay your attempt from a choice of views including your target's and a bomb's eyeview.

For arcade adventure fans The Exotic Adventures of Sylvia Lane has finally been released for £25.95. Traversing the horrors of Aztec Temples, New York building sites and Houston Space Centre, Sylvia must rescue that brilliant but mad Greek geneticist Marcus Mousacca.

A humorous adventure where you will find maps to help and baddies to hinder you. Luckily Sylvia is well trained in this type of mission.

Haunted House – also £25.95 – is a multitasking adventure. You play a Lovejoy-type character employed on a house-clearance in a very strange abode. Not only have you got to find your way through dozens of challenging puzzles but the ghosts are less than friendly and will steal back their inheritance given half a chance. Take special note of the sampled sounds and beautifully-drawn scenes. You'll need 2Mb ram.

Last but not least comes Carnage Inc (£25.95). Set in the year 2297 Earth is under the control of a council who have abolished weapons of war. However, alien invaders mean they commission Carnage Inc to build you – a Cyberkill Mk II Battle Droid.

In a 3-D isometric world – like Pandora's Box – you can use grenades, flame-throwers, land-mines and lasers to penetrate the enemy defences.

In the search for victory you must travel four planets and over 200 screens where you'll be met by both battle and puzzles aimed to thwart you. Detailed graphics and sound all add to the experience.

Platform and adventure DIY

ALPINE Software (0762 342510) have released Creator II to make it even easier for you to create your own platform-style games. The new version includes scroll text for professional demo writing and a new bar graph facility for automatic display of energy, shields and so on.

The new tiled background make good use of memory and a new button bar lets you insert instructions with a single mouse click. Multi-level games can be catered for with each level loaded separately from disk while the old features have been retained.

You can upgrade the previous version for £20 while the price for new users is £49 including example games, sprites, sound effects, music and tutorial files.

For adventure fans Alpine have compiled the Adventure Collection. For £15 you'll receive full versions of Plague Planet, COPS and a previously unreleased title Kidnapping by Gary Wass as well as a series of hint sheets on disk for each game.

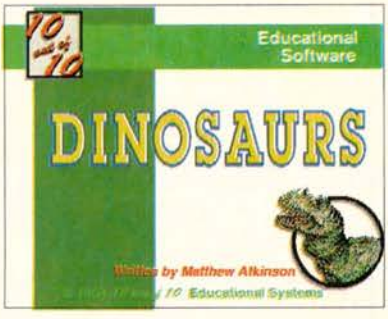
Essential learning

SHEFFIELD-based Ten out of Ten Software (0742 780370) have two new products: Junior Essentials and Statistics. These both follow the same successful formula as their predecessors with National Curriculum assessment charts, certificates for completion and a variety of levels to games designed to stretch and entertain.

Junior Essentials covers a variety of subjects such as Maths, Geography, Logic and French while Statistics invites you to play Survey, Bomber, Cheers, Archer, Whack It and Sniper while teaching subjects such as probability, averages and estimation needed from AT3 to 5.

Also due for release before the end of the year are two further additions to the range Dinosaurs and a set of questions and challenges to teach you to drive.

Watch this space.



A Spanish touch

THE learning of Spanish has had a boost recently due to both the Single European Market and to the National Curriculum requirement to learn a modern foreign language.

LCL (0491 579345) have responded with Micro Spanish for the 32-bit machines.

It aims to take beginners to GCSE level in spoken and written language and covers business Spanish as well – all for £24.99. Teaching is a mixture of speech, music, animation and still pictures plus a book with the emphasis on making the learning process fun.

November 1993

The Archimedes Specialists

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Please add carriage and then VAT at 17.5% to your order. This also applies to European (unless you quote your VAT number), and BFPO customers.
Zero VAT items are marked with *.

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ACCESSORIES

0772c	4 Way Surge Strip	Bowthorpe	20.50
5854b	A4 Shoulder Bag	Acorn	35.00
0723c	Delta Cat Joystick	Voltmace	24.74
5493b	Joymaster	Leading Ed	24.00
0726b	Joystick Controller	Leading Ed	34.00
0789a	Mouse Mat - Blue	BEEBUG	3.36
0788a	Mouse Mat - Red	BEEBUG	3.36
0714b	Mouse Splitter	Voltmace	16.48
4084c	SuperCharger Joystick	Quickjoy	9.50
0762c	Trackerball - Archimedes	GEC	39.00

BOOKS/MANUALS

5478b	!Help	Sherston	7.95*
5479b	!Help - Draw	Sherston	15.95*
5481b	!Help 3	Sherston	9.95*
1207c	30 Hour BASIC	BBC/NEC	15.95*
1265c	A3010/3020 Tech Ref Man.	Acorn	29.95*
5856b	A4 Portable Handbook	Acorn	7.50*
5857c	A4 Technical Ref Manual	Acorn	65.00*
5855b	A4 Welcome Guide	Acorn	10.00*
1252c	A5000 Tech Ref Manual	Acorn	65.00*
1238c	Acorn Educ Directory	Acorn	4.95*
1203b	ANSI C Rel 4 User Guide	Acorn	25.00*
0915a	Arch Ass Lang Prog Disc	Dabs P	7.21
1211b	Arch Assembly Language	Dabs P	14.95*
1262b	Arch Game Makers Manual	Sigma	14.95*
1243b	Arch Oper. Syst (Book)	Dabs P	14.95*
1246b	Archimedes First Steps	Dabs P	9.95*
1228b	Assembler 2 User Guide	Acorn	25.00*
1222b	Basic Wimp Prog on Acorn	Dabs P	14.95*
1244c	BBC Basic VI Guide - Arc	Acorn	19.95*
1261b	Budget DTP on the Arch	Dabs P	12.95*
1212c	C: A Dabs Guide 3rd Ed.	Dabs P	16.95*
1247b	Control on the Arch	HCCS	9.95*
1230b	Desktop Dev Env User Gde	Acorn	25.00*
1260b	DTP on the Arch Book	Sigma	14.95*
1214b	DTP Seeds	4Mation	8.45*
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BKO3a	File Handling Arc Disc	RISC Dev	4.04
1249c	First Impressions-Manual	Word Proc	29.95*
1269b	Good Impression Manual	Word Proc	26.95*
1255b	Graphics on the ARM Book	Dabs P	14.95*
1237b	Impression Guide	Dabs P	14.95*
1248b	Mastering 1st Word +	Dabs P	13.95*
1206e	Prog Ref Manual RISC OS3	Acorn	99.00*
BK13a	WIMP Prog for All Disc	RISC Dev	4.21
BK12b	WIMP Programming for All	RISC Dev	12.95*

CD ROM DRIVES & ACCESSORIES

5750a	CD Caddy	Cumana	6.50
5776e	CD- !Woodland	APA	144.00
5752e	CD- 4 Disc Set	MDI	149.00
5753b	CD- Acorn Educ Directory	APA	29.00
5942c	CD- Artworks	CC	165.00
5943b	CD- Artworks Clip-art	CC	19.00
5772c	CD- British Birds	ILP Ltd	150.00
5758c	CD- CD Francais	CDT	120.00
5769c	CD- Creepy Crawlies(MDI)	CDT	90.00
5773c	CD- Dict of Living World	MDI	175.00
5779d	CD- Dinosaurs! (MDI)	CDT	124.00
5764c	CD- Grooves (MDI)	CDT	90.00
0305c	CD- Hutchinson Encyclope	PEP/Attica	99.00
0306b	CD- Illus. Holy Bible	APP Ltd	23.00
0307b	CD- Illus. Shakespeare	APP Ltd	23.00
5770c	CD- Image Warehouse(MDI)	CDT	53.00
5757c	CD- Ma Ville	OAK	55.00
5774c	CD- Revelation II	Longman	98.00
0308b	CD- Sherlock Holmes	APP Ltd	23.00
0309b	CD- Space Encyclopaedia	APP Ltd	57.50
5777c	CD- The Really Useful v1	APA	47.00
5778c	CD- The Really Useful v2	APA	47.00
5775c	CD- Times & Sunday Times	TNS	195.00
0290g	CDROM Drive A3000	Cumana	589.00
0231g	CDROM Drive A5000	Cumana	589.00
5866g	Family Fun/Educ Pack 1	Cumana	412.00
5867g	Family Fun/Educ Pack 2	Cumana	499.00
5862g	Multimedia 16bit SCSI	Acorn	599.00
5861g	Multimedia 8bit SCSI	Acorn	599.00
5864g	World of CD 400/540/5000	Cumana	637.44
5863g	World of CD A3000/3010+	Cumana	637.44

COMPUTERS

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COMPUTER UPGRADES & EXPANSION

0133c	A3000 1Mb RAM	RISC Dev	31.00
0130c	A3000 1Mb RAM (Ugdable)	RISC Dev	59.00
0131e	A3000 4Mb RAM	RISC Dev	139.00
0228e	A3000 Podule Expander	Wild Vis	159.85
0277b	A3000 Serial Chips	Acorn	17.00
4610e	A3000/4000 User/Anal.	RISC Dev	44.95
4611e	A3000/4000 User/Anlg/Ec	RISC Dev	79.95
0144c	A3010 1Mb RAM	RISC Dev	29.00
0146e	A3010 4Mbyte RAM	RISC Dev	129.00
0145c	A3020/A4000/A4 2Mb RAM	RISC Dev	89.00
0125e	A310 4Mb RAM	RISC Dev	269.00
0768c	A310 4way B'Plane + Fan	Ifel	52.00
5850d	A4 2Mb RAM for FD System	Acorn	105.00
0278c	A400/1 Series 1Mb RAM	RISC Dev	27.00
0141e	A410/1 8Mb RAM Card	RISC Dev	419.00
0142e	A420/1 8Mb RAM Card	RISC Dev	399.00
0143e	A440 & A440/1 8Mb RAM	RISC Dev	369.00
0147g	A5000 2->8Mbyte RAM	RISC Dev	399.00
0124c	A5000 2Mb RAM	RISC Dev	99.00
0148e	A5000 4->8Mbyte RAM	RISC Dev	349.00
4613e	A5000 User Analg & Eco	RISC Dev	79.95
4612e	A5000 User/Anlg Port	RISC Dev	44.95
0225g	A540 4Mb RAM	Acorn	253.16
0134e	ARM 3 Upgrade	RISC Dev	165.00
0775g	ColourCard	CC	225.00
1359b	Concept K'bd Arch I'face	Concept K	29.00
0784c	Disc Buffer 400/1 & 540	RISC Dev	34.95
0135c	Disc Buffer A3000	RISC Dev	39.95
0795c	Disc Buffer A310/A440	RISC Dev	34.95
0127c	Disc Buffer A5000	RISC Dev	34.95
5808g	Eagle M2	Wild Vis	TBA
0774e	FaxPack	CC	279.00
0222g	Floating Point Accelerat	Acorn	99.00
4630e	High Density FDC	RISC Dev	119.00
4631e	High Density FDC + Drive	RISC Dev	159.00
0271c	I/O Podule - Arch	Acorn	79.95
4614b	Joystick Adaptor	RISC Dev	17.95
5809g	Lark (Sound Sampler)	Wild Vis	TBA
0236b	MEMC1A Upgrade Kit	RISC Dev	25.00
0272c	Midi Add-on to I/O Arch	Acorn	28.95
0273c	MIDI Podule - Arch	Acorn	69.00
0238c	MIDI/User Port A3000	Acorn	46.55
5880g	Multi I/O + 1.6Mb Floppy	Greyhound	199.00
5882g	Multi I/O 120HD IDE	Greyhound	TBA
5881g	Multi I/O 85HD IDE	Greyhound	239.00
5883c	Multi I/O Paral/Ser Port	Greyhound	45.00
5849c	Numeric (Maths) Co-Pro	Aleph One	99.00
5461c	Oak-Recorder II	Oak	39.95
5848b	PC Windows Driver S'ware	Aleph One	25.00
5844g	PC386 1Mb Card For Arch	Aleph One	379.00
5870g	PC386 1Mb For A3020/4000	Acorn	225.00
5845g	PC386 4Mb Card For Arch	Aleph One	489.00
5846g	PC486 1Mb Card For Arch	Aleph One	479.00
5847g	PC486 4Mb Card For Arch	Aleph One	579.00
5871g	PC486 4Mb For A3020/4000	Acorn	579.00
5874c	Printer/SCSI Interface	Atomwide	75.00
0884b	RISC OS 3 Hardware Kit	Ifel	21.00
0887b	RISC OS 3 Hardware Kit	Acorn	25.53
0888d	RISC OS 3.1	Acorn	41.70
0885g	RISC OS 3.1 BULK (10)	Acorn	339.58
0158e	SCSI 16bit Card For Arch	Oak	189.95
0863e	SCSI Card (Cumana) Arch	Cumana	189.95
0216g	SCSI Card (V 3) For Arch	Acorn	250.00
5297b	User Port Power Supply	RISC Dev	17.00
0139b	VIDC Mode Expander	RISC Dev	29.95
5441e	ZY-FI Stereo Speaker Sys	Zydec	34.74

DISCS (BLANK) & ACCESSORIES

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0634d	3.5 x100 Bulk 1Mb Discs	BEEBUG	42.00
0676c	3.5 x40 1Mb Discs + Box	BEEBUG	23.33
0632c	3.5 x50 Bulk 1Mb Discs	BEEBUG	22.50
0674b	3.5HD x10 2Mb Discs+ Box	BEEBUG	12.00
0638d	3.5HD x100 2Mb Blk Discs	BEEBUG	75.00
0636c	3.5HD x40 2Mb Discs+ Box	BEEBUG	42.00
0637c	3.5HD x50 2Mb Bulk Discs	BEEBUG	40.00
0672b	Disc Box for 3.5 (10)	BEEBUG	1.69
0656c	Lockbl 3.5 Disc Box (40)	BEEBUG	4.13
5646c	Lockbl 3.5 Disc Box (80)	BEEBUG	8.47

FLOPPY DISC DRIVES

0279g	400 Series 2nd Floppy Dr	Acorn	70.00
0604g	CD800S Dual 40/80T Drive	Cumana	225.00
0617g	CS354 3.5 + PSU Drive	Cumana	94.00
0603g	CS400 40/80T + PSU	Cumana	119.00
0616g	CSX354 Disc Drive	Cumana	79.00
0602g	CSX400 40/80T Drive	Cumana	99.00
5880g	Multi I/O + 1.6Mb Floppy	Greyhound	199.00

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5283g	A3000 External IDE 162Mb	RISC Dev	369.00
5285g	A3000 External IDE 260Mb	RISC Dev	489.00
5286g	A3000 External IDE 450Mb	RISC Dev	689.00
5270g	A3000 Internal IDE 20Mb	RISC Dev	199.00
5272g	A3000 Internal IDE 80Mb	RISC Dev	299.00
5273g	A3000 Internal IDE 120Mb	RISC Dev	389.00
5275g	A3000 Internal IDE 210Mb	RISC Dev	539.00
5240g	A3010 Internal IDE 20Mb	RISC Dev	179.00
5242g	A3010 Internal IDE 80Mb	RISC Dev	289.00
5243g	A3010 Internal IDE 120Mb	RISC Dev	379.00
5245g	A3010 Internal IDE 210Mb	RISC Dev	529.00
5230g	A3020 Internal IDE 20Mb	RISC Dev	125.00
5232g	A3020 Internal IDE 80Mb	RISC Dev	229.00
5233g	A3020 Internal IDE 120Mb	RISC Dev	299.00
5235g	A3020 Internal IDE 210Mb	RISC Dev	479.00
5851g	A4 60Mb HD Upgrade	Acorn	350.00
5296g	A5000 162Mb 2nd Drive	RISC Dev	219.00
5294g	A5000 260Mb 2nd Drive	RISC Dev	319.00
5298g	A5000 450Mb 2nd Drive	RISC Dev	519.00
5263g	Arch External IDE 162Mb	RISC Dev	359.00
5265g	Arch External IDE 260Mb	RISC Dev	479.00
5266g	Arch External IDE 450Mb	RISC Dev	679.00
5290g	Arch IDE 20Mb Hard Card	RISC Dev	199.00
5292g	Arch IDE 80Mb Hard Card	RISC Dev	299.00
5293g	Arch IDE 120Mb Hard Card	RISC Dev	379.00
5295g	Arch IDE 210Mb Hard Card	RISC Dev	529.00

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5253g	Arch Internal IDE 162Mb	RISC Dev	259.00
5255g	Arch Internal IDE 260Mb	RISC Dev	379.00
5256g	Arch Internal IDE 450Mb	RISC Dev	579.00
5882g	Multi I/O 120HD IDE	Greyhound	TBA
5881g	Multi I/O 85HD IDE	Greyhound	239.00

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0772c	4 Way Surge Strip	Bowthorpe	20.50
0569b	Printer Lead 1.8m Arch	BEEBUG	5.91
0425b	Printer Lead 2m Arch	BEEBUG	7.62
0424b	Printer Lead 3m Arch	BEEBUG	8.47
0578c	Printer Lead 5m Arch	BEEBUG	16.98

MODEMS/COMMS SOFT/HARDWARE

5913b	Chatter	4Mation	33.00
0093c	Hearsay II	RISC Dev	75.00
5593g	MicrolinFx Fax/Modem Pac	BEEBUG	249.00
3111g	SM2400 + Hearsay II+Lead	BEEBUG	139.00
5592g	Sportster Fax/Modem Pack	BEEBUG	349.00

MONITORS & ACCESSORIES

0190g	Acorn AKF18 Multiscan	Acorn	254.47
0182g	Acorn AKF30 Monitor	Acorn	211.91
0180g	Acorn AKF40 Monitor	Acorn	211.91
0532g	Cub 2038 20in Monitor	Microvitec	999.00
0525g	Cub-Scan 1440 Monitor	Microvitec	399.00
0546e	Monitor Filter	Memorex	78.60
0503g	Phillips Green Monitor	Phillips	87.00
0501g	Ranger 5017 Monitor	Aydin	853.00
0502g	Ranger 5021 Monitor	Aydin	1380.00
0545d	Screen Filter 14 C.Fibr	BEEBUG	24.64
0509g	Taxan 789LR Monitor	Taxan	309.00

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4601e	A3000/3010 Ethernet Card	RISC Dev	139.00
5025b	A3020/4000 Econet Module	Acorn	49.00
4602e	A3020/4000 Ethernet Card	RISC Dev	139.00
5853c	A4 Econet Upgrade	Acorn	50.00
4600e	Arch/A5000 Ethernet Card	RISC Dev	139.00
5005c	AUN Level IV Fileserver	Acorn	394.00
5006c	AUN Level IV SL Upgrade	Acorn	199.00
5075b	Classprint LD	Oak	75.00
5017b	Econet Upgrade M128/Arch	Acorn	47.95
5037e	Ethernet A3020/A4000 Int	Acorn	149.00
5038e	Ethernet Card for A4	Atomwide	199.00
1209	Networking leaflet	BEEBUG	0.00*
5008c	TCP/IP Programmers Pack	Acorn	50.00*
5009c	TCP/IP Protocol Suite	Acorn	199.00

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0454c	Labels 2000 3.5	Label-Trac	10.50
0515c	Laser Printer Labels	Avery	9.96
0422c	Laser Printer Paper	BEEBUG	6.34
5644d	Paper 15.3x11 60gsm 1pt	BEEBUG	17.00
5645d	Paper 15.3x11 70gsm 1pt	BEEBUG	20.00
0453d	Paper 2pt 9.5x11 60gsm	BEEBUG	23.00
5640d	Paper 9.5x11 1pt 60gsm	BEEBUG	12.00
5641d	Paper 9.5x11 1pt 70gsm	BEEBUG	13.00
5642d	Paper 9.5x11 1pt 85gsm	BEEBUG	11.00
0455d	Paper A4 70gsm 1-part	BEEBUG	14.40
5643d	Paper A4 90gsm 1-part	BEEBUG	12.60
0421c	Photocopy Paper	BEEBUG	3.36

POCKETBOOK ACCESS/SOFTWARE

0581b	A-Link	Acorn	42.51
0584b	Flash Disc 256K	Acorn	59.53
0588c	Flash Disc 512K	Acorn	85.06
0587b	Mains Lead -Pocket Book	Acorn	12.72
0586b	OPL Editor	Acorn	59.53
0390e	Pocket Book Computer	Acorn	169.95
0591b	Pocket Book Desk Stand	Widget	13.61
0589b	Pocket Book Finance Pack	Widget	59.53
0590b	Pocket Book Games Pack	Widget	42.51
0392g	Psion 3 256k	Psion	195.00
0583b	RAM Disc 128K -Pocket Bk	Acorn	51.02
0596b	Schedule - Pocket Book	Acorn	16.98
0597g	Schedule Class Pack	Acorn	170.17

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0428c	Crossover switch 2x2	BEEBUG	34.00
0497e	LaserDirect HiRes Card	CC	324.00
0538c	Print Sharer 2 to 1 Auto	BEEBUG	32.34
0539c	Print Sharer 4 to 1 Auto	BEEBUG	42.55
0427c	Printer Sharer 2 to 1	BEEBUG	16.98
0567c	Printer Sharer 4 to 1	BEEBUG	28.57
0440c	Printer Stand Adjustable	BEEBUG	8.47

PRINTERS

0333g	Acorn Inkjet Printer	Acorn	229.00
0364g	Canon BJ10sx - Black	Canon	179.00
0365g	Canon BJ10sx - White	Canon	179.00
0451g	Canon BJ20 - Cream	Canon	265.00
0347g	Canon BJ200 Printer	Canon	280.00
0346g	Canon BJ230 Printer	Canon	315.00
7510g	Canon BJ300 Printer	Canon	329.00
7511g	Canon BJ330 Printer	Canon	415.00
0320g	Canon BJC600 Printer	Canon	489.00
7525g	Canon BJC800 Printer	Canon	1370.00
0380g	Epson FX1050 Printer	Epson	403.75
0328g	Epson FX850 Printer	Epson	323.75
0388g	Epson LQ100 Printer	Epson	176.40
0326g	Epson LQ1060 Colour	Epson	723.75
0375g	Epson LQ1070 Printer	Epson	368.40
0376g	Epson LQ1170 Printer	Epson	517.20
0329g	Epson LQ450 Printer	Epson	238.26
0374g	Epson LQ570 Printer	Epson	240.00
0327g	Epson LQ860 Colour	Epson	543.75
0382g	Epson LQ870 Printer	Epson	424.80
0377g	Epson LX100 Printer	Epson	155.00
0386g	Epson LX1050 Printer	Epson	329.00
0378g	Epson LX400 Printer	Epson	136.13
0322g	Epson LX850 Printer	Epson	172.50
0381g	Epson Stylus 800 Printer	Epson	239.00
0461g	HP Deskjet Portable	HP	295.00
0490g	HP500C Colour Deskjet	HP	269.00
0452g	HP510 Deskjet Printer	HP	235.00
0494g	HP550C Colour Deskjet	HP	449.00
0496g	LaserDirect HiRes4	CC	779.00
7500g	LaserDirect HiRes8	CC	1075.00
7570g	Star Laser LS-5	Star	525.00
7575g	Star Laser LS-5EX	Star	649.00
7580g	Star Laser LS-5TT	Star	845.00
0441g	Star LC-100 Colour	Star	149.00
0343g	Star LC-15 Printer	Star	193.00
0471g	Star LC-20 Printer	Star	113.00
0436g	Star LC-200 Colour	Star	160.00
0444g	Star LC24-100 Printer	Star	162.00
0338g	Star LC24-15 Printer	Star	249.00
0367g	Star LC24-20 II Printer	Star	189.00
0337g	Star LC24-20 Printer	Star	176.00
0402g	Star LC24-200 Colour	Star	220.00
0300g	Star SJ144 Colour Printe	Star	475.00
0442g	Star SJ48 Inkjet Printer	Star	189.00
0472g	Star XB24-200 Colour	Star	341.00
0473g	Star XB24-250 Colour	Star	407.00
0477g	Star ZA-200 Printer	Star	269.50
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5506g	ScanLight II A4 A3000	CC	277.00
1963g	ScanLight II A4 Arch	CC	277.00
1970g	Scanlight Pro+SCSI A5000	CC	699.00
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FAX for only £249

OFFER 1

A complete package to enable your computer to send and receive both FAX's and data. Offer includes Microlin FX modem, Hearsay II, ARCFax and connecting lead. The Microlin FX modem offers CCITT V21/22/23/22bis (Data) and V21/27ter/29 (FAX), MNP 5 and LAP-M along with a 5 year warranty.

All for only £249 Code 5593g

OFFER 2

As offer 1 but with the US Robotics Sportster modem instead. The Sportster modem offers features as aabove, as well as V32/32bis (Data).

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5842g	Chroma Genlock CG2 -Arch	Wild Vis	215.00
5590e	Digitiser Colour	HCCS	79.00
5591e	Digitiser Colour-A3000	HCCS	79.00
5594g	Greyhawk	Wild Vis	97.00
0877g	Hawk V9 MkII (Dithered)	Wild Vis	259.00
0878g	Hawk V9 MkII (Standard)	Wild Vis	199.00
1958g	ScanLight Video - A5000	CC	215.00
5589e	VIDI Digitiser Col-A3000	Rombo	72.00
5588e	VIDI Digitiser Col-Arch	Rombo	72.00

SOFTWARE

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5470c	Payroll Manager	Silicon Vi	66.00
0922c	Personal Accounts	Apricote	29.00
0920c	Prophet	Apricote	131.00
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1917c	Share Holder	Silicon V	102.13

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1909c	Arc PCB Professional	Silicon V	234.00
0913c	Arc-PCB	Silicon V	99.00
1931c	CADet	Minerva	127.00
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0958c	Oak PCB	Oak	93.00
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1910c	SolidCad	Silicon V	78.00
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1111c	Impression Publisher	CC	135.00
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0108c	Ovation DTP	RISC Dev	99.00

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1922b	Font Selwyn/Sydney	Acorn	34.00
1920b	Font Starter Pack	Acorn	34.00
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5526c	ShowPage	CC	139.00
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5510b	Tracer	Midnight G	46.00
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0931g	S-Base 2 Developer	Longman	186.00
0933c	S-Base 2 Personal	Longman	75.00
5447c	Squirrel 2	Digital	129.00
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5763b	Crystal Rain Forest	Sherston	34.50
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5703b	Freddy's Adventure	Topologika	18.00
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SOFTWARE (continued)

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5782b	Hilighter	Sherston	32.00
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5798b	Micro French	LCL Soft	24.00
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5929b	Phases #3	NW SEMERC	19.00
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5707b	Podd	ESM	25.00
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5934b	The Playground	Topologika	27.00
5485c	Topographer	Clares	62.00
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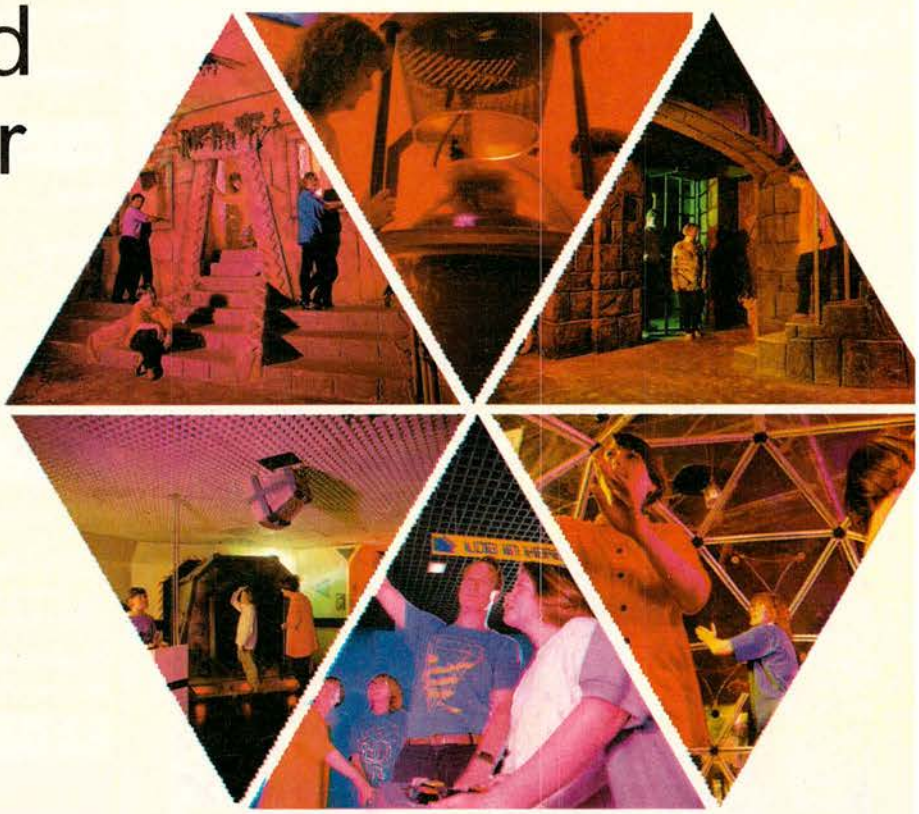

The Crystal Maze is a Chatsworth TV production for Channel 4 based on ideas by Jacques Antione & Co.

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Are you up to the challenge? Sherston Software and *Acorn Computing* want 10 readers to experience the Crystal Maze for real.

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The test

1. Aztec: *The Aztecs farmed on specially constructed islands called:*
a. Chinampa
b. Islets
c. Tlachtli

2. Ocean: *The Titanic was built to be unsinkable. In what year did it go down?*
a. 1944
b. 1912
c. 1850

3. Industrial: *Which pair of elements is combined with iron to create stainless steel?*
a. Sodium and chromium
b. Nickel and sodium
c. Chromium and nickel

4. Medieval: *Which of the following is not a weapon?*
a. Poniard
b. Trebuchet
c. Glockenspiel

Name _____

Address _____

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Age _____

The answers

1 ☐A ☐B ☐C
2 ☐A ☐B ☐C
3 ☐A ☐B ☐C
4 ☐A ☐B ☐C

Now send this to Crystal Maze Competition, Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP. Closing date December 31.

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The Action Pack

This pack is now supplied with all A3010 systems. It includes the arcade game Zool, a powerful word processor with spelling checker called Startwrite and an audio training tape along with demos of four other games.

The Home Office Pack

An excellent pack for the professional looking to use the computer for more serious applications.
It includes Pipedream 4, EasiWriter, DataPower, DR DOS 6 and the PC Emulator. Also included is an audio training tape and demo versions of Prophet Accounts and Almanac personal organizer.

Portables

The A4 system is a similar specification to the A5000 but in a portable format. In its base form it is supplied with 2Mb RAM and no hard drive.
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Amphibian adventure

Marshal Anderson follows Flossy on her travels

IT'S nice to see that Mike Matson is back on the educational software scene with a series of new games. Following Granny's Garden (The Return) and Darryl the Dragon we now meet Flossy the Frog. This is a fully multitasking program but it does need at least 2Mb of memory to run.

As it arrives on three disks there is a certain amount of swapping to do while the program is running. It can be installed on a hard disk but explicit instructions are not provided and it takes a little trial and error.

Flossy is not an adventure game in the style of Granny's Garden. There are no *problems* as such to solve and there is no specific ending, it's much more open than that. Aimed at the lower end of the primary age range Flossy is an environment to explore.

There are nine different scenes to look at, each of which contains a number of objects which can be clicked on to find out more about it and animate it. A certain amount of memory work is required as the routes to the various scenes are not obvious – they have to be found by exploration and children must remember how to get to the scenes they want.

So, we can go to the beach and make the ships sail, we can visit Flossy's kitchen and see what's in the cupboards, we even fly a spaceship.

The animations are a delight to watch – most of the scenes and are accompanied by excellent sound effects and the Matson sense of humour is shot through the whole thing. Flossy is written in an upgraded version of the Darryl authoring system and so allows several animations to run at a time.

The important thing about Flossy is the way it encourages a child to try things out, not to dismiss options. This works very well because almost anything you click on will present at least some text and usually some animated response. To add to its flexibility a click of Adjust will always bring text rather than an animation.

You will see that I have given Flossy a very low figure for supervision but that is a minimum just for exploration. What we have here is an animated reading book and it can be used in a variety of ways.

At a pre-reading level Flossy could be used to stimulate discussion within a group – again very much like a picture book, there's no problem with the program if the text is not read. At higher levels the more a teacher or parent puts into supporting the program the more children will get out of it.

To help with this the teacher's notes provide a series of questions that might be asked at each scene. While these seem to be biased towards science there's plenty of scope for using Flossy as a springboard into many subject areas, though it only explicitly supports Key Stage One Language as far as the National Curriculum is concerned.

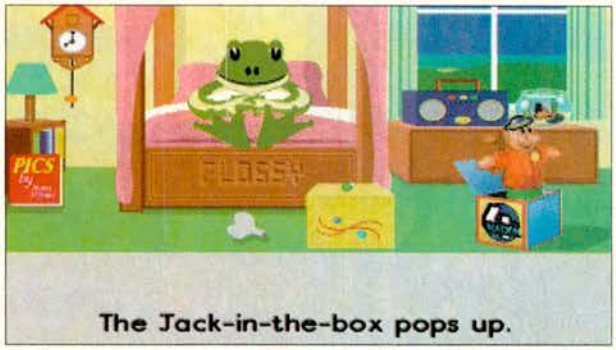
The single user price puts it well in the range of the home user. The site licence price is a little more than schools are used to paying but 4Mation provide a key disk purchasing option at £10 which allows schools to buy just what they need for the machines they have.

PRODUCT SPOTLIGHT

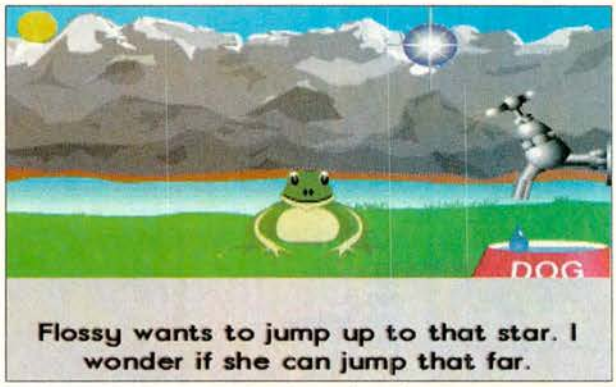
Product: Explore with Flossy the Frog
Price: £28.79 (inc VAT)
Supplier: 4Mation, 14 Castle Park Road, Barnstaple, Devon EX32 8PA.
Tel: 0271 25353
Requirements: 2Mb ram

Summing up

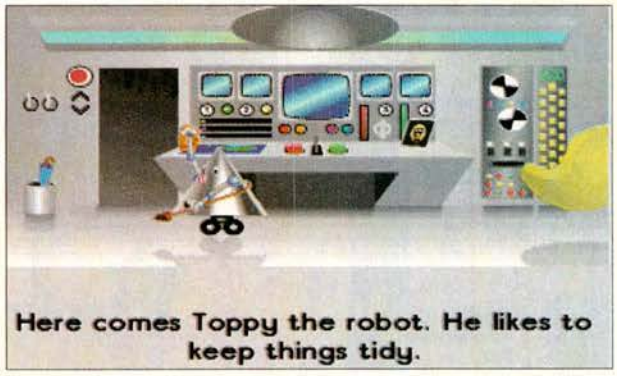
In the infant school and in the home this is an excellent program for reading in its own right. As a stimulus for further activities in a whole range of areas it could easily provide half a term's work.



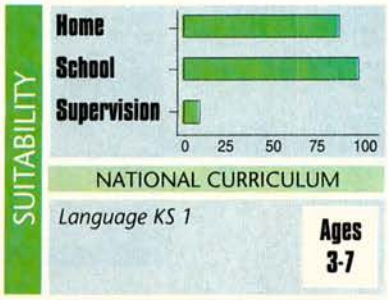
● *Some animations are more unusual than others*



● *This is your starting point for each exploration*



● *The graphics and detail are quite superb*

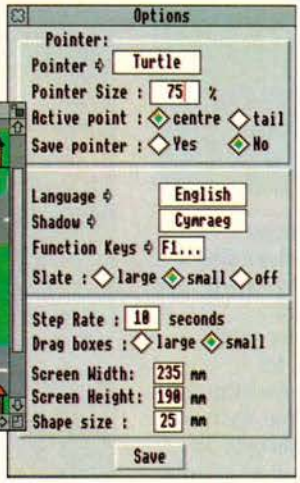


A Beginner's Guide to Logo...

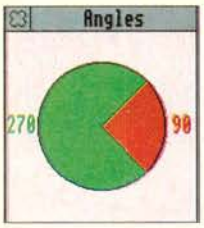
FIRST LOGO

Slates allow easy entry of commands, simply by clicking

Take the turtle for a journey around town!

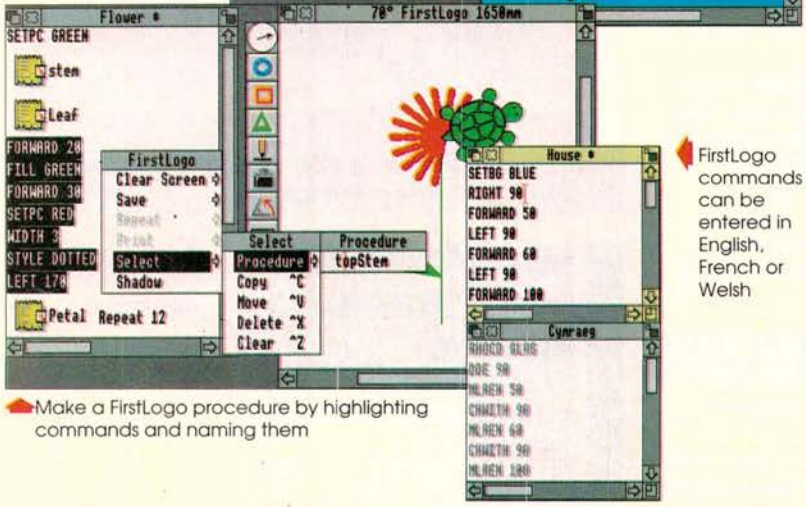


A large range of options make FirstLogo easy to configure for specific needs



Just point and click to measure an angle or distance

There are many exciting activities to try, such as this UK based map activity



FirstLogo commands can be entered in English, French or Welsh

Make a FirstLogo procedure by highlighting commands and naming them

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LONGMAN LOGOTRON

Storming the battlements

Has this adventure stood the test of time? Marshal Anderson investigates

THERE hasn't been anything like the range of educational adventures developed for the Acorn 32-bit machines as there was for the old BBC Micros. Leaving aside the reasons for this, it is nice to see several appearing over the last few months.

Castle of Dreams is a re-write of the game published by Widget nearly 10 years ago, but takes advantage of many of the bigger computer's facilities in sound and graphics.

You move through the castle using standard compass bearings, and mapping is very straightforward. Each room is well illustrated and there is atmospheric music which you can switch off if it gets irritating.

As you move around you encounter a series of *games* which must be played to get objects. The games are the kind of thing you would expect with ordering, decoding, using multiples, mapping a maze and so on. Each is presented graphically in a clear and pleasing manner and help is always available.

Along the way various obstacles block your path and it is for these that you need the objects. The links are fairly simple: You need a lamp to get down a dark passage, a handle to open a portcullis, a key to open a gate and so on. Completing the games and collecting objects opens up the castle until you find a casket and the wicked Klingsor's staff.

The object is to get the casket to the nearby volcano and destroy it – you need the staff to get out of the castle. To add a little spice, as soon as you have found the staff the castle begins to burn and you only have a limited time to get out, so mapping is very important. Once you have found the volcano and disposed of the casket you are taken back to the castle to do it all again, so there isn't actually an end as such.

This is all fine. The tasks are well chosen to be of a similar level, though you would have trouble relating them directly to the National Curriculum. The user interface lets you use the mouse or the keyboard and there's no confusion here. You can save the game at any point and so on, but somehow the whole thing doesn't quite work.

I think the main problem is the way the locations in the castle are randomised each time you play. Sometimes the game can be completed very quickly, avoiding most tasks, but occasionally it seems you can't complete it at all.

This helps keep the interest up in the home but is a real problem in the classroom where teachers need to know what their pupils have been up to, though you could solve this by saving the game at its start.

There is also a lack of clarity. If you accidentally stumble upon the staff before you have found the casket the castle seems to burn down whether you take it or not.

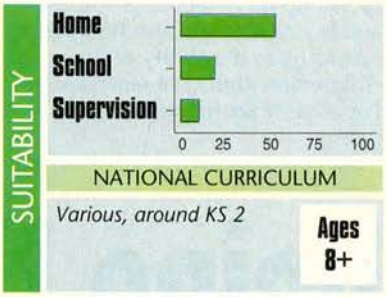
There are also problems with the objects. You can only carry two which is good for planning and problem solving but it's very difficult to leave them anywhere – you often find yourself repeating a task to get an object back. From a narrative point of view, if the castle was burned down as you left it how can you go back for more spells?

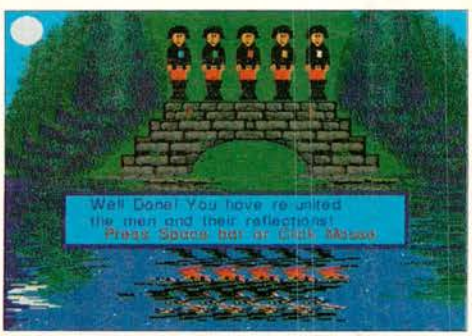
PRODUCT SPOTLIGHT

Product: Castle of Dreams
Price: £25.99 (inc VAT)
Supplier: Storm Software, Coachman's Quarters, Digby Road, Sherbourne, Dorset DT9 3NN.
Tel: 0935 817699

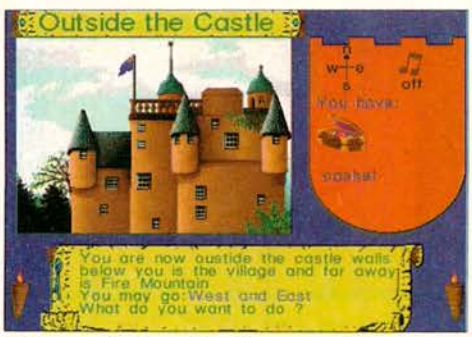
Summing up

This is not a bad program, it's just a little frayed around the edges. At home, with children of eight and above, it will present a challenge that will keep them interested for some time but there many, better programs of this type available, even if they are usually under BBC Micro emulation.





● *The puzzles make good use of 32-bit graphics*


Outside the Castle
You have:
casket
You are now outside the castle walls below you is the village and far away is Fire Mountain
You may go: West and East
What do you want to do ?

● *As an adventure it is nicely presented*

Fire Mountain
You have:
casket
But wait...Klingsor has made some more cruel spells. You must now find and destroy these spells!!

● *Just when you thought it was all over*

Using the little grey cells

Can a classic game make the transition to education? Pat Janes puts it to the test

ORIGINALLY, I played this game using objects on a tray and Le Computer's version has taken this classic memory test on to the 32-bit machines. The aim is to identify everyday objects, which are shown in groups.

There are 60 items and 29 levels. The levels progress in steps of two words – that is Level 1 has four words, Level 2 has six with Level 3 having eight words and so on.

You have three chances to name the items correctly. Each is on the screen for five seconds at its default setting but you can adjust this down to 3 or up to 10 seconds. Volume and key repeats can also be changed according to the ability of the children or adult. The rendition of Popcorn by Brown Sugar is very catchy.

All you have to do is remember the names and enter the details correctly. If you fail any level, you can repeat it but with a different set of items or you may start again from the beginning.

Matching pictures and names is one of the methods used to introduce reading. However, not all the pictures offered in this program would be suitable for this, which is a shame.

But all could be used to increase vocabulary. Also some of the pictures would not be identifiable without the name underneath.

Flash cards of the pictures and of the names would prove a welcome addition, particularly for the early learner and for those who have a learning difficulty.

Another possible use would be to take the each group of nouns and weave them into a sentence, a group of sentences and even a story.

The random selection of objects and their names give the program and its possible alternative uses endless opportunities for learners and as a re-enforcement or learning exercise.

PRODUCT SPOTLIGHT

Product: Kim's Game
Price: £21.28
Supplier: Le Computer, Main Road, Willows Green, Chelmsford, Essex CM3 1QB.
Tel: 0245 362225

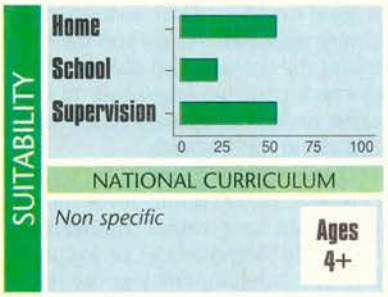
Summing up

I do have several reservations about Kim's Game. Some of the graphics were disappointing considering the power of the machine and the music would soon get on my nerves.

Also I would have liked to be able to repeat a group of words or a level to consolidate a learning experience and give additional practice.

This can be played by most ages and could be utilised at home and at school. Early readers would probably find the size of the letters and pictures a little on the small size.

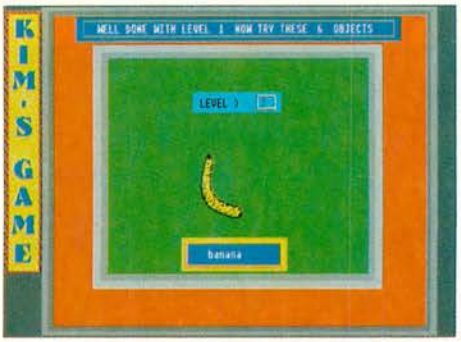
By the time you get to Level 5 you would need a remarkable memory store, but this is a good way to increase memory, at any age. I must confess that I made notes of the items on the lists in the higher levels.



KIM'S GAME
Kim's Game
Is an object identity game which contains 60 everyday items. There are 29 levels of play starting with just 4 objects. Levels then progress in steps of 2 for example with 6:8:10 etc. You have 3 chances to correctly identify objects. By default each remains on the screen for 5 seconds. This is adjustable from between 3 & 10 seconds. Should you fail on any level, it is possible to restart from the beginning of the one in question. Sound, volume & key repeat are also adjustable. The "Key Repeat Off" option may be of particular use to disabled players. "Kim's Game" was named after the little Indian boy who first played it. Answers can be entered in any order.
GOOD LUCK !!
PLAY

● *The history of the game is interesting*

● *If at first you don't succeed...*



A banana? I'll take your word for it

10 out of 10 for algebra

Rog Frost marks the latest maths program

MATHEMATICS attainment target three must be the bugbear of many students aged from 5 right through to 16. It deals with algebra, where letters represent numbers and with the whole complex language of equations and graphs.

The 10 out of 10 people are attempting to address this area with a suite of fun programs which provide practice at a range of skills, for youngsters aged 6 and upwards.

What you get for your money is a set of six games with suitable paper documentation, built-in record keeping and reporting system for up to 64 students. There are also various ways of setting up the program by pre-selecting levels or by modifying questions.

It is also possible to ensure children get the same set of questions. A security code is used to prevent unauthorised tampering. There is a separate, seventh game, which is about spelling mathematical words. These days, spelling is a crucial part of all exams at GCSE level.

Each of the six main games has six levels to cater for a wide age range. The graphics change with different levels so that they keep their appeal for different aged youngsters. The games have a mix of arcade speed and skill but rely mostly on quickly coping with the required mathematics.

The first is **Graphoid** and is played on simulated graph paper. Level 1 is simple, with you moving the mouse to control an astronaut teddy. Instructions such as *move to top right* are given. When there, the mouse button must be clicked. The teddy moves as though in space, with gentle smooth acceleration and deceleration.

It sounds – and is – easy but asteroids are loose in the area and these have to be avoided. Fortunately, they travel in straight lines. Level 2 introduces positive x,y coordinates and later levels move through negative coordinates to graph inequalities. These higher levels are definitely a challenge for able mathematicians.

Game two introduces the **Processor Machine**: Numbers go into it and come out processed. You are told the process and the input number and have to calculate the output. At higher levels, you might be given the output and have to compute the input.

Level 1 processors are concerned with addition of single digits. Levels move through more complex algebraic ideas and at the high levels you have to cope with formulae with brackets and inequalities.

Patterns are searched for in **Chain Up**. A number at the bottom of the screen must be linked with an equation which equals that number. Again, level 1 has simple ideas, while level 6 is about the shapes of graphs and is testing a level 8 skill on the National Curriculum – good enough for a high GCSE pass. This game has less of an arcade feel than others.

Hook It comes next and in this you must lower a crane to hook the correct answer. Movement, as in all the games, is achieved using the mouse. Level 6 on this program was the one area to completely defeat me if I played with a time limit. It involves the transformation of equations and recognising which equation is not the same as all the others.

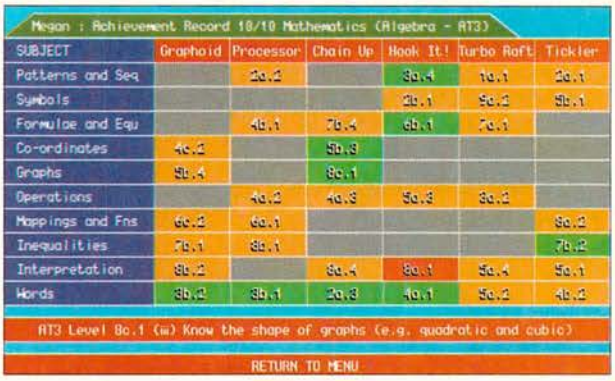
I should point out that games can have a time limit or not, but bonus points are always scored for speed. Each game has a high score table but this is not used when assessing the players' mathematical skills and knowledge, it's for the children's own sense of achievement.

Turbo Raft is my favourite and you're in control of a river boat. Simple levels look at patterns while later, fractional and negative powers are explored.

The final game is **Rib Tickler**. The task here is to stop clowns reaching the food with graphics varying with the levels. Answer a question correctly and you can push a clown away. This, again, becomes a real challenge at the highest level.

PRODUCT SPOTLIGHT

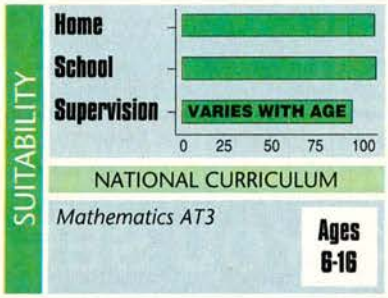
Product: 10/10 Maths: Algebra
Price: £25.95
Supplier: 10/10 Educational Systems, 1 Percy Street, Sheffield S3 8AU.
Tel: 0742 780370


Megan : Achievement Record 10/10 Mathematics (Algebra - AT3)
SUBJECT | Graphoid | Processor | Chain Up | Hook It! | Turbo Raft | Tickler
Patterns and Seq | 2a.2 | 3a.4 | 1a.1 | 2a.1
Symbols | 2a.1 | 5a.2 | 5b.1
Formulae and Equ | 4b.1 | 7b.4 | 6b.1 | 7a.1
Co-ordinates | 4a.2 | 5b.3
Graphs | 5b.4 | 8a.1
Operations | 4a.2 | 4a.3 | 5a.3 | 3a.2
Mappings and Fns | 6a.2 | 6a.1 | 8a.2
Inequalities | 7b.1 | 8a.1 | 7b.2
Interpretation | 8a.2 | 8a.4 | 8a.1 | 5a.4 | 5a.1
Words | 3b.2 | 3b.1 | 2a.3 | 4a.1 | 5a.2 | 4b.2
AT3 Level 8a.1 (m) Know the shape of graphs (e.g. quadratic and cubic)
RETURN TO MENU

● *Quick National Curriculum records. Blue stands for got it, yellow means working towards it while red means not achieved*

Summing up

I have to confess to not being too enthusiastic about 10 out of 10 products in the past but this pack is very good. It is not over noisy and is well suited to both home and school use. It encourages good skills, like searching for patterns and estimating. Also it's available on approval, so what are you waiting for?



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GET your fingers on Shift+Break or plug in the serial link for the latest news from the world of the BBC Micro and the Master. No, Dr Who isn't back, but there are a host of programs to keep you busy until he (or she) returns.

There are quite a number of text adventures on the BBC machines and courtesy of Acornsoft comes **Gateway to Karos** by Derek Haslam now released into PD. The theme is familiar: Find the Talisman of Khoronz and return through the gateway to your own time. A pretty straightforward adventure although I would have preferred a better parser and a few more instructions.

You could always write your own though and the **BAPS Adventure Creator** will take you through to stages to do just that. You may come up with a **Time Balls** or an **Insomnia** which are also worth spending some time on.

Epson-compatible printer owners could do worse than look at the utility by Chris Richardson which programs your function keys to turn print styles on and off. You can print out a function key strip too and mix styles as you will.

A must for anyone paying tax and national insurance is a database called **Tax and Insurance 93-94** which gives jargon-free facts and figures on income payment and relief, mortgages, business and equity plans, capital gains tax, corporation rates, personal pension premiums and much more.

A number of sophisticated programs require sideways ram and ADFS systems. Jim Burdus's **Form Designer** comes under this category and is similar in look and use to View. This is quite demanding on your machine and the occasional glitch does occur.

Fable or the Fast Advanced Basic Line Editor from Richard Taylor also has a lot in common with InterWord and View. Easy links with Basic have been included and the use of 32-bit style icons is nice. Features include case sensitive and wildcard search and replace as well as standard copy, delete, paste and print functions.

I do admit to a certain penchant for things Roddenberry-related and may even give the occasional Star Trek Mystery Party. And I'm quite keen on seeing series seven of Next Gen which is about to reach these shores from the US, but I am not a Trekkie. Honest.

Conventional demos

Joachim Schneider from Rottenburg in Germany has thrown down the gauntlet to everyone who thinks they can write a demo. Further details are available from QArc on Arc, Hinter dem Schloss 2/2, 72108 Rottenburg, Germany. The closing date for entries is February 1, 1994.

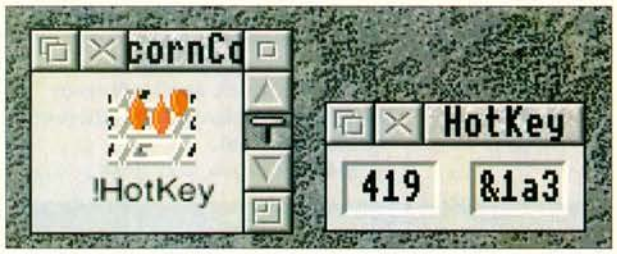
ArcDemo'94
QArc on Arc and PCP are proud to present the very first Demo-competition on Archimedes called "ArcDemo'94". We want YOU to compete with other Archimedes-Demo-Writers in order to find out who's the best coder, graphician or musician! Every piece of program, running on an Archimedes, that looks like a Demo or an Intr

● *Your invitation to a demo creation competition – there's money and a game on offer as prizes*

Run, Rabbit run

Can the same be said for Mad Rabbit PD? They have a Deep Space Nine Database containing digitised pictures of the characters, background information, episode guide and sampled sounds. A variety of disks on Star Trek are available including an encyclopaedia on the first six seasons of Next Gen and a collection on documents including jokes, spoof scripts and so on.

The Star Trek Drinks Mixer is an essential addition to any cocktail cabinet. Now you too can create Romulan Cola and Klingon Grog. Moreover, Mad Rabbit have also given Red Dwarf the treatment too. It is likely that Mad Rabbit will be producing a disk-based magazine soon called Destroyed Realities. Watch this space.



● *Ahh, so that what's Control+F3 gives me*

By the way BBC PD are offering a free 5.25in catalogue and sampler disk to the first 200 *Acorn Computing* readers who send them an SSAE.

Back in the 32-bit world there are two new utilities from the prolific desktop of Ben Summers: TaskEnsure and Memorizer. **Task Ensure** is for RISC OS 3 people and aims to stop a duplication of applications on the iconbar or in memory as it checks to see if these are already present before loading.

You can copy the TaskEnsure file into your Library directory – the best option for most hard disk users – or you could just load the TaskEnsurM module. This takes the principles of RMEnsure for modules one step further.

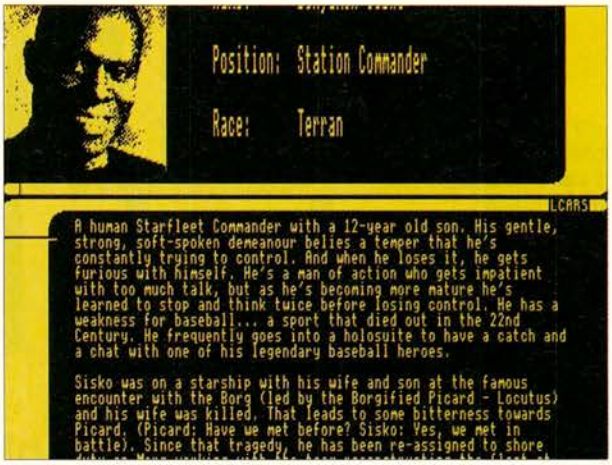
Second is **Memorizer** which only works under RISC OS 3.10 and sits in the background, and waits for ➤

```
Run ADFS::Charlie.$.AcornComp.AC/12.PD/Progs.!Tidy Disc.!Run
Tidy Disc - Copyright © Anthony Brion 1993.
          Public Domain - Version 1.00
Please wait analysing root directory: ADFS::Charlie.$

  Renamed file : ADFS::Charlie.$.!Fonts.!BOOT
  Renamed file : ADFS::Charlie.$.!Fonts.!HELP
  Renamed file : ADFS::Charlie.$.!Fonts.!RUN
  Renamed file : ADFS::Charlie.$.!Fonts.!SPRITES
  Renamed file : ADFS::Charlie.$.!Fonts.Brushscrip.Intmetric
s
  Renamed file : ADFS::Charlie.$.!Fonts.Brushscrip.outlines
```

● *TidyDesk is busy at work*

● *Memorizer – how have you managed without it?*


Position: Station Commander
Race: Terran
LCARS
A human Starfleet Commander with a 12-year old son. His gentle, strong, soft-spoken demeanour belies a temper that he's constantly trying to control. And when he loses it, he gets furious with himself. He's a man of action who gets impatient with too much talk, but as he's becoming more mature he's learned to stop and think twice before losing control. He has a weakness for baseball... a sport that died out in the 22nd Century. He frequently goes into a holosuite to have a catch and a chat with one of his legendary baseball heroes.
Sisko was on a starship with his wife and son at the famous encounter with the Borg (led by the Borgified Picard - Locutus) and his wife was killed. That leads to some bitterness towards Picard. (Picard: Have we met before? Sisko: Yes, we met in battle). Since that tragedy, he has been re-assigned to shore

● *Know the ins and outs of DS9 even if you haven't got Sky*

➤

directories to be opened, applications run and files opened. When it finds one it records the event. When you press a hotkey – which you can set yourself – a window pops up listing the last eight directories, applications or files, and double-clicking will re-run or load the item.

If, for example, you close a directory or file or quit an application and then suddenly decide that, after all, you didn't want to close it, you would normally have to go though lots of directory windows to find it again. However, with Memorizer, you don't. Just press the hotkey, select the list the object will be in, and double-click on it.

This is quite simple to load automatically as long you can find your way around a !Boot file but you can just run it by double-clicking in the usual way.

Once the hotkey is depressed a window appears with three icons representing directories, applications and files. Clicking on one of the icons changes the currently displayed list to that containing the appropriate object. The colour of the blob beside the icon indicates which list is selected.

The *key* lets you lock an object so it doesn't disappear when the list is full and another object is about the be added. Just click on the white strip opposite the icon of the object to toggle the lock on and off.

The names of the objects stored are kept in chunks of memory within the RMA and are set to 1k each to save memory – increase this via the options sub-menu and setting this to a higher value will avoid problems with objects not being added to the lists because of lack of memory.

A couple of restrictions apply but are easily circumvented such as if you drag more than one file to an application, you may find that only the first few, usually four, appear in the Memorizer window. Also Impression, which uses application directories as files, will be recognised and put in the files list. But only if the parent application is loaded when one of these files is opened.

If the parent application is started up by opening this file, it will be placed in the applications list. I've been using Memorizer for a while now with Impression and ArtWorks and haven't experienced any real problems. In fact, as I have the latter set up to remove documents on close it has saved me a lot of trouble.

A nicely finished utility which I have found useful if not invaluable at times. Definitely recommended for heavy users.

Not one to sit still Anthony Brion has two more utilities to make life a little easier too. First off is **Tidy Disk** which has two purposes. First is to uncompress !Boot, !Sprite, GIF, TIFF, AmigaIFF and archived files compressed by CFS quickly and shrinking further the size of graphics files that are already compressed.

Its second aim is to to standardise common application files. For instance, !SPRITES will be renamed to !Sprites and !RUNImage will be renamed to !RunImage.

HotKey displays all hot key press values, in hex and decimal form. Useful for programmers.

● *Next month there'll be a bumper PD section in the Acorn Computing – Special Edition.*

This month's featured PD

Program	Library	
BAPS	JJF PD	
Epson Printer Driver	8-bit Software	
Fable	BBC PD	
Form Designer	BBC PD	
Gateway to Karos	BBC PD	
HotKeys	MegaDisk2	
Insomnia	JJF PD	
Memorizer	MegaDisk2	
Red Dwarf Docs Disk	Mad Rabbit	BB-047
Star Trek: Deep Space Nine Database	Mad Rabbit	BB-035
Star Trek Drinks Mixer	Mad Rabbit	BB-039
Task Ensure	MegaDisk2	
Tax and Insurance 93-94	8-bit Software	
TidyDesk	MegaDisk2	
Time Balls	JJF PD	

PD LIBRARIES

8-BIT HOUSES

8-bit Software, 17 Lambert Park Road, Hedon, Hull, East Yorkshire HU12 8HF.
BBC PD, 18 Carlton Close, Blackrod, Bolton BL6 5DL.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
JJF PD, 49 Hollyberry Close, Winyates Green, Redditch, Worcester B98 0QT.
Mad Rabbit PD, PO Box 4, Crigglestone, Wakefield, West Yorkshire WF4 3XE.
Masterdisc, 2 Seaview, Hoylake L47 2DD.
Welsh Boys PD, 88 Queen Street, Barry, South Glamorgan CF62 7EE.

32-BIT HOUSES

3PD Swapshop, 66e Picardy Road, Belvedere Kent DA17 5QN.
Alpine PD, PO Box 25, Portadown, Craigavon BT63 5UT.
APDL, 39 Knighton Park Road, Sydenham, London SE26 5RN.
Arcaynia, PO Box 1927, Sutton Coldfield B74 3QZ.
ArchAngel PD, PO Box 41, Exeter, Devon EX4 3EN.
Archimedes Fractal Group (AFG), 30 Bowen Drive, West Dulwich, London SE21 8PN.
ARM PD, 109 Woodland Drive, Cassiobury, Watford WD1 3DA.
ARMistic PDSL, 136 Wellesley Road, Ilford, Esex IG1 4LJ.
Craig Beech PD, 30 The Deerings, Harpenden, Herts AL5 2PE.
Datafile, 71 Anson Road, Locking, Weston-Super-Mare, Avon BS24 7DQ.
Datastream, 34 Norbreck Close, Great Sankey, Warrington, Cheshire WA5 2SX.
Different Ideas, Eyton House, Eyton, Leominster Herefordshire HR6 0AG.
Digital Illusions, 20 College Road, Wembley, Middlesex, HA9 8RL.
Digital Phenomena, 104 Manners Road, Southsea, Portsmouth, Hampshire PO4 0BG.
DigiTech, 20 Downing Crescent, Bottesford, Scunthorpe, South Humberside DN16 3LS.
Gem PD, 15 Partridge Down, Oliver's Battery, Winchester, Hampshire SO22 4HL.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
LowCost PD, 6 Furzeland House, Sheephouse Way, New Malden, Surrey KT3 5PH.
Naked PD, Fayence, Fulford Road, Fulford, Stoke-on-Trent ST11 9QT.
Planet PD, 37 Manor Drive, Berrylands, Surbiton, Surrey KT5 8NF.
Skyfall, PO Box 2220, Birmingham B43 5RZ.
Westbourne Services, 34 Bradley Street, Wooton-under-Edge, Gloucester GL12 7AR.

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Noddy's Big Adventure is the sequel to the highly successful Noddy's Playtime. It takes children to the North West corner of Toyland and includes 13 different programs to educate and entertain children for hours on end.

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10 out of 10
TEN OUT OF TEN EDUCATIONAL SYSTEMS

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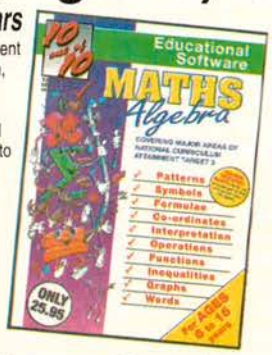
Maths (Algebra)

For children 6 to 16 years



Covering many areas from Attainment Target 3 of the National Curriculum, the *10 out of 10* Maths (Algebra) package is packed with subjects, levels and activities to challenge all children from Key Stage 1 right up to Key Stage 4.
Following sequences, interpreting graphs, solving equations and numerous other algebraic skills have never been so much fun. This is the fun way to practise and become fast and proficient with the manipulations needed for high examination marks.

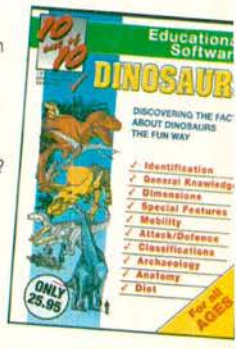
Junior Essentials¤

For children 5 to 11 years

A truly flexible package covering many topics essential for building a good educational foundation. The areas covered have been carefully chosen by a team of experts and come from several subjects and levels of the National Curriculum.
The child's progress in these areas is constantly monitored and recorded and parents or teachers can easily discover where a child needs help. As with all the *10 out of 10* series, further motivation to play the games and learn more is added in the form of High Score Tables.

Dinosaurs

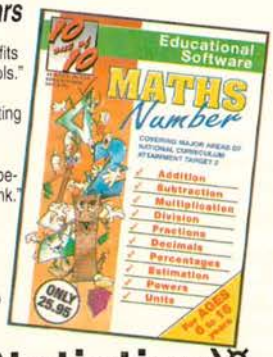
For all ages



This package is the fun way to learn the truth about dinosaurs. The six games all have superb digitised graphics to make a whole area of history – dinosaurs – come alive.
If you came face to face with a tyrannosaurus would you run away? Or are you safe because it's a vegetarian and wouldn't eat you? This, together with 100s of other interesting facts, can be discovered from this enthralling package.
The six games – all with single and multi-player options – are educational fun for everyone.

Maths (Number)

For children 6 to 16 years



"Well thought out to offer real benefits to children studying in British schools." – *PC Plus (July '93)*

"Educationally worthwhile and exciting to play – a rare combination." – *Archimedes World (December '92).*

"Unique in home-based programs because of the National Curriculum link." – *The Micro User (September '92)*

"Excellent for reinforcing specific mathematics knowledge." – *Junior Education (July '93)*

"The 10 out of 10 Series lives up to its name." – *PC Home (August '93)*

Early Essentials

For children under 7 years

"Outstanding. All of the activities are not only very enjoyable but they're well thought through. It's one of the best multi-purpose infant packages I've seen in a long while. If you have young kids get it for the home. If you're a teacher, hammer on the headteacher's door and beg for money to buy a copy." – *Archimedes World (July '93)*

"At just £2595 you'll be hard pressed to find anything which even comes close to Early Essentials." – *Micro Computer Mart (Sept. '93)*

English

For children 6 to 16 years

"Everything being done is relevant to the player's education. An invaluable curriculum experience, plenty of fun, lots of variety." – *PC Home (November '93)*

"Guaranteed to sustain the attention of even reluctant learners." – *RISC User (January/February '93)*

"Most importantly, as the games are fun, children can't help but learn." – *Acorn Computing (March '93)*

"Allows progression from Junior school age right up to GCSE level." – *Amiga User International (Sept. '93)*

Maths (Statistics)¤

For children 6 to 16 years

Attainment Target 5 of the National Curriculum is Data Handling – a vital area of Mathematics. *10 out of 10* Maths (Statistics) covers 36 specific topics from that subject.
In this package, recording animal sightings in an animated pond or rolling dice are just two of the many challenges that children will relish as they learn about statistics. And can graph drawing be a game? It becomes arcade action as bricks and bombs are dropped onto the charts. This is a really enjoyable way to learn about statistics.

French¤

For children 6 to 16 years

This suite of six educational games will give fun and motivation to all children learning French. The package is designed with the Modern Languages National Curriculum firmly in mind and contains many challenges to reinforce facts stated in Attainment Targets 3 and 4.
10 out of 10 French is essential for children on Key stages 3 and 4, but the numerous parent and teacher customisation options make the software suitable for all children – however young – who are learning the French language.

Driving Test¤

For all drivers and learners

Whether you're a novice learner or an advanced expert, there's plenty you can learn from this package. There are thousands of built-in questions and you can choose whether you want to answer them directly or add to the fun by trying them within games.
The six games have been designed to be fun for all adults and include strategy, mental agility, coordination and more. And, if you think you are up to it, you can "*take the test*" – a challenge covering many areas of the Driving Test.

The INNOVATIVE *10 out of 10* Series

These highly acclaimed suites of programs are a revolutionary step forward in educational software. They ALL use a unique system of automatically recording children's progress as they play and learn. This is just one of the many features which sets the 10 out of 10 Series in a class of its own.

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As children learn from the games their progress is **automatically recorded in 36 specific challenges** – the National Curriculum Attainment Targets of these areas are optionally displayed on screen in subject-based packages. All the programs are **designed in Britain** to be **fun for single players or groups** and the assessment system can monitor the progress of up to 4000 children with **no input from parent or teache**r needed. Watch them, join in the fun or leave them and return later to check their progress. **You're in control!**

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The 10 out of 10 Series is available for Acorn 32-bit computers (Archimedes), Commodore Amiga and IBM/PC and compatibles. If you buy any two items before Xmas 1993, £15 will be deducted from the total price. At the time of going to press, titles marked ¤ were not available on all formats and may not be released before Xmas. They may however be ordered at the offer price. Please ring for availability.

The *10 out of 10* Series is available from all good computer software suppliers

The short list

Stephen Wade puts another selection of programs to the test

Word Search: Puzzle this one out...

OVER the years, many programs have been written to aid the solution of problems – indeed the first electronic computers were built for this express purpose. WordSearch deviates from this norm as it is designed to aid you in puzzle creation.

Solving wordsearches is a trivial task yet a large proportion of us still appreciate the challenge. But to have problems to solve, they first need to be created and that's where this application comes in.

Wordsquares of between 10x10 and 25x25 characters can be generated. The list of words to use are provided by an Edit file you have prepared and dragged to the application.

You can choose the positioning and direction of the first word, or leave the computer to locate this in the default top-left corner. As many words as possible are fitted into the puzzle, processed in the order they have been sorted. Using the menu options it is easy to discover which have and have not been used afterwards.

The printed instructions are clear, comprehensive and assume the minimum of knowledge. Page two contains a *procedure flow chart* which sums up in a few lines exactly how to use the program.

Although the application fully multitasks, during the creation of a wordsquare it assumes pretty much full control of your machine. This can be anything up to a few minutes depending on the size of the wordsquare and the list of target words.

The word list menu persisted in closing after I clicked on an option with Adjust – an oversight that would take mere seconds to correct. The program would not run from my hard drive, consistently reporting *Line too long* each time I tried.

Teachers could find an educational use for the program. For instance, a wordsquare containing 20 famous composers could be produced to test students' knowledge before formal tuition.

Those schools which produce their own magazine or newspaper may also find it beneficial during the creating of puzzle pages.

Unless you are in the business of regularly creating wordsearches – or desperately seeking for further puzzles to solve – I wouldn't rush to place it top of your Christmas list.

PRODUCT SPOTLIGHT

Price: £19.97 (inc VAT)
Supplier: Davyn Software, The Workshop, off Princess Street, Sandal, Wakefield, West Yorkshire WF1 5NY.
Tel: 0924 254800

Font Directory: Desktop publishers delight

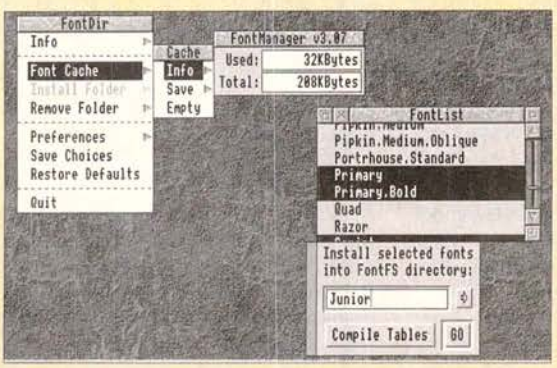
ACORN scored a industry first by making it possible for a single encoding of a font to be rescaled to almost any conceivable size.

However, the system has always lacked a front-end management system to give full control over fonts. Enter Font Directory.

Font data is stored in a special *font partition* – similar to an archive or PC hard disk partition – including compressed data formats. The system comprises two applications: *!FontMgr* and *!FontDir*.

The former is the file manager which is used to create and maintain partitions. The latter controls which fonts are available.

Once you create your partition, clicking the FontMgr icon opens a directory viewer. The partition size can be adjusted at any time, the only pre-requisite being it is a minimum 1k larger than the amount of data in it.



Fonts are installed by the usual dragging from a !Fonts directory or the more sophisticated *Partition.Install Fonts* menu option.

This is a simpler, more efficient method as it presents a list of all fonts on your system and their sources.

Using the FontDir window, you choose which of the partitioned fonts are to be made available and can quickly display a string of text in any of the fonts and selection lists can be saved out as text files.

This avoids the need for individual partitions for different font selections – a single huge partition can be made.

Saved lists can be invoked through the command line with **UseFonts* followed by a file pathname. This sounded rather uninviting, so I looked for a multitasking alternative.

Cancel all current selections and drag a textfile to the FontDir window. If you choose not to clear the current selections, a merge takes place.

This is an excellent application and a must for DTP and anyone with a large number of fonts in their collection. The 32-bit machine has been waiting a long time for a professional font management system such as this.

PRODUCT SPOTLIGHT

Price: £35 (inc VAT)
Supplier: LOOKsystems, 47 Goodhale Road, Bowthorpe, Norwich NR5 9AY.
Tel: 0603 748253
Requirements: RISC OS 3

FlyPrint: Just the ticket?

PRODUCT SPOTLIGHT

Price: £39.97
Supplier: Dixon & Dixon Computer Systems, 35 Rokeby Drive, Kenton, Newcastle Upon Tyne NE3 4JY.
Tel: 091-285 3042

MOST documents produced on the Archimedes are created in one of the many wordprocessing or desktop publishing packages. FlyPrint provides a quick, alternative way of designing pure text advertisements, tickets and invoices.

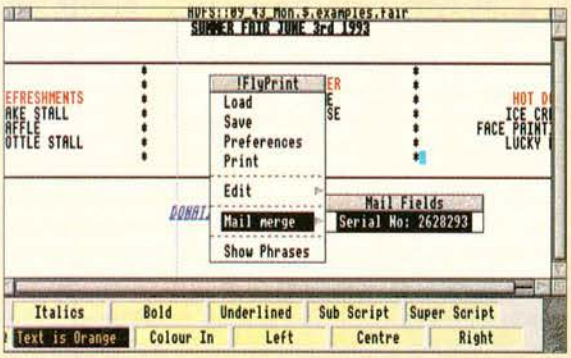
Loading the program installs it on the iconbar and changes the pointer to a bolder, red design.

Clicking the program icon opens a window containing six menu options: Load, save, preferences, print, edit and exit. The last is identical to the quit option on the iconbar menu.

Creating and altering flyers is straightforward. Using the *preferences* dialogue box and its offspring windows, the page size and perforation markers can be quickly adjusted. Placing and editing text is a simple matter of selecting a line with the mouse or cursor keys and typing away.

Several options are provided for emphasising any part of the text – italics, bold, underlined, subscript, superscript and colour – which can be used in any combination.

One of the most powerful features of the package is its mailmerging facility.



This allows you to specify certain fields to have their contents determined from a named file – such as a list of names and addresses.

I was pleased to see a separate automatic numbering facility provided for ticket creation purposes.

Clippings of text that could be needed for later flyers can be stored in a handy phrase book – the number you can have at any one time is limited by the memory allocated to the application on initialisation. The manual suggests a method of raising this limit, although this could – and should – be automatically catered for by the program.

A serious flaw in this package is it does not conform to the standard printer drivers, providing default support for only Epson compatibles.

The required commands are held in a separate CSV file which could be altered for other formats but this is left to you.

In my opinion, this is not acceptable for a commercial product and is easy to correct using the Fancy fonts option for text only printing.

Despite its inconsistencies this is still a reasonable package. However, I would expect much better RISC OS compliance and printer support for this price.

Schools and small businesses will make best use of FlyPrint – the mailmerge and perforation handling make it ideal for invoices or fund-raising tickets.

HatchBack: What the doctor ordered

PRODUCT SPOTLIGHT

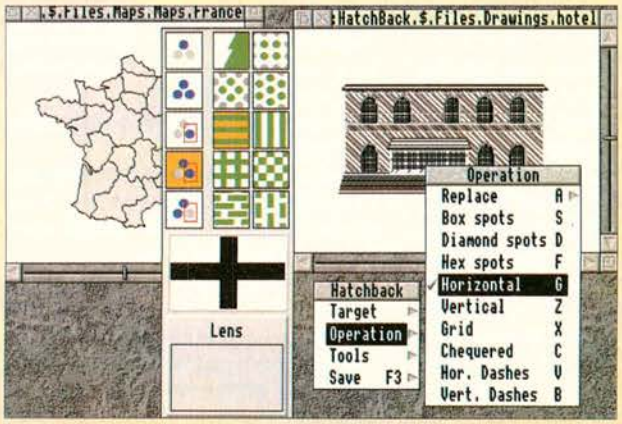
Price: £35
Supplier: 4Mation, 14 Castle Park Road, Barnstaple, Devon EX32 8PA.
Tel: 0271 25353
Requirements: RISC OS 3.1

IMAGES created in packages such as Draw usually appear visually appealing on-screen. However, the transformation to paper using a monochrome printer is often somewhat disappointing. Colours and grey scales appear as patchy areas due to the use of chunky dot oriented patterns.

Enter HatchBack, a clever, easy-to-use application. It works with any Draw, Poster or Compressed Draw format file and allows you to shade most objects *either currently filled or not* with a chosen hatching pattern. Objects can be processed individually or in a boxed group area.

Ten standard patterns are available – including circles, lines, dashes and chequered designs. Each can have its angle, density and frequency adjusted, opening up infinitely more possibilities. Several examples are given at the back of the manual.

It was reassuring to see the patterns drawn anti-aliased at consistent intervals in both axes. This means that unless the shaded objects are tiny and your printer resolution extremely low, the printed results are certain to be good.



Undo and Redo functions are supported, giving confidence that any ill-conceived or unintentional changes can be quickly reversed. Should you decide you liked them after all, they can be reinstated. The size of the undo buffer is not hardwired into the program and can be set to one of five levels – ranging from none to ridiculous.

Files can be saved out in Draw, Poster or Compressed Draw format, thus allowing modified files to be loaded into most DTP and design packages. Each shading component is actually stored as an individual selectable draw object and so can be manipulated using other packages at a later stage.

Although Hatchback is really intended to enhance monochrome images, there is extensive colour support. You can choose from 16 or 256 colour palettes, 256 shade grey scale or from the sophisticated RGB colour cube. So, should you desire yellow with purple stripes you can have it – provided you have a colour printer, that is.

This is a valuable application, producing much more visually acceptable results than the printer drivers alone are capable of. Although primarily aimed at professional and educational users – a free site licence is provided – it will also prove an asset to DTP enthusiasts and other home users.

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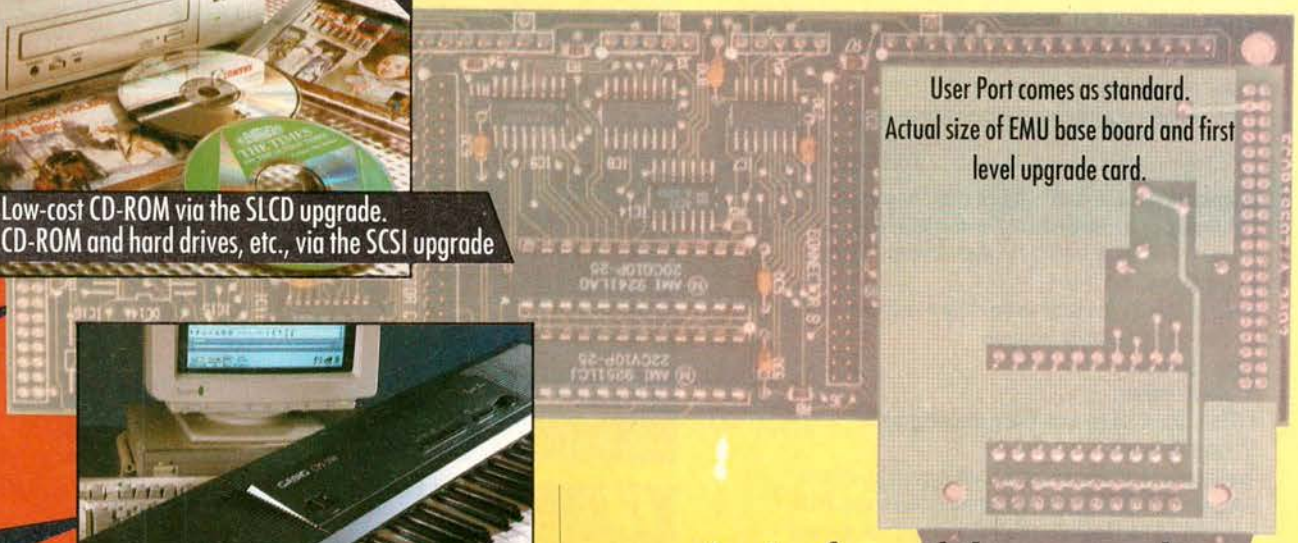

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- A virus killer and detector that will detect and kill all current viruses. Warns you if an unauthorised attempt is made to access files such as !Boot files and will remove any existing infections for you. Configurable to be active at all times or only scan new discs.

This combination of packages makes Investigator III the best disc utility suite available on the Acorn and makes sure that you won't get caught out by damaged data!

Desktop Tracker £49.95

"...programming at its best" - Acorn User January 1993

Continuing in the tradition of the immensely popular Tracker package, use Desktop Tracker to create fantastic tunes with no extra hardware.

Desktop Tracker has been completely rewritten to incorporate many new and innovative features:

- Up to 16 tracks
- Fast playroutines
- 4 effects per note on each track, allowing up to 64 simultaneously
- Real time effects include pitch bend, arpeggio, volume slide, phasor effects, note retriggering and many more.
- Powerful editing facilities, including transpose, cut and paste, echo and more.
- Score display allows you to see your tunes and samples in traditional stave notation format.
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MIDI/Sampler Interface £79.95

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THE font situation on the Acorn 32-bit machines is settling into a new phase of expansion now, with two fresh players – the Datafile and LOOKsystems – entering the scene. The former introduces the somewhat specialist but popular world of medieval and Gothic typography and illumination, while the latter aims to provide a wide choice of styles.

Fancy fontwork

Bruce Goatly expands his typeface repertoire

Medieval and Gothic fonts

The Datafile are best known as a PD house but have recently added this theme package to their range. More than fonts are on offer – on the four disks in the set are six outline fonts of various degrees of antiquity and a wide variety of drawfiles of clip art decorations, ornaments and alphabets.

Some of the ornaments were also shaded in ArtWorks for added embellishment.

The two well prepared and informative manuals explain how the drawfiles can be disassembled and put together again in new ways. In fact, the whole emphasis of this tastefully presented package is on stimulating creativity and in this it succeeds well.

● *An illuminated D – note the ArtWorks flower*

There are five fonts – in RISC OS 2 format only – with one also in a sloping variant. Carol and Karen, which in my view are the best even if the hardest to read, are Gothic and more than a little ornate.

Priory, a simple calligraphic script, comes in upright and oblique forms.

Versals is an attractive capitals-only font suitable for titling and for drop capitals with Priory. I was a bit disappointed with Charlie – the letter spacing and thicknesses are uneven.

Some of the nicest touches in the fonts are in the extra characters provided, for instance Carol's *long s* which appears in old printing but is normally mistaken nowadays for an *f* and is usually misprinted as one. Ornamental braces, ligatures – joined letters – and border characters also appear.

An earlier version of the package came on three disks. Not only were there fewer drawfiles but the fonts lacked a full character set, which was probably reasonable because the originals wouldn't have had them and they would mostly be used as display fonts.

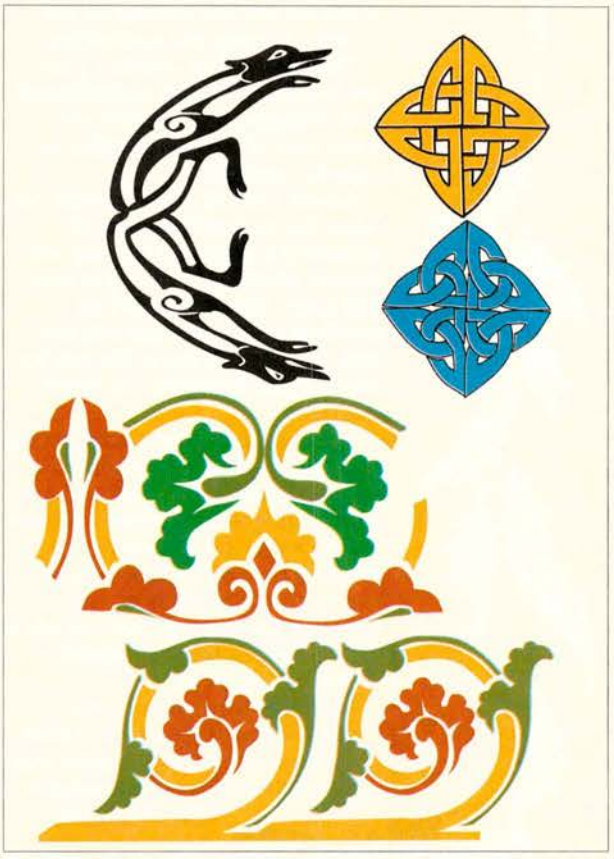
However, the author of the collection, Tony Nash, has put in a lot of work in preparing his mark 2 version of the fonts and the result justifies the effort – the daggers look like real daggers! More to the point, the Datafile are offering the new package for the same price as the original and an upgrade for existing users for only £2.

So now there's really no excuse for spending days illuminating your manuscripts by hand.

➤

PRODUCT SPOTLIGHT

Product: Medieval and Gothic Fonts and Clip Art
Price: £31.50
Supplier: The Datafile, 71 Anson Road, Locking, Weston-Super-Mare, Avon BS24 7DQ.
Tel: 0934 823005



● *Some of the ornaments for assembly into borders*

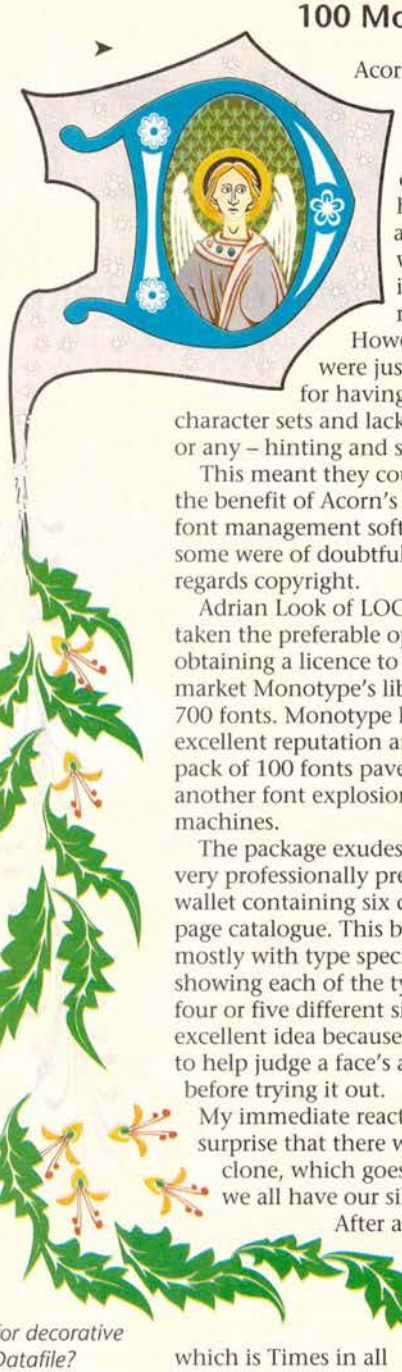
This is Carol font – with Very Ornate Capitals.
This is Karen, which is more Germanic.
Priory is a simple calligraphic font.
VERSALS COMES IN CAPITALS ONLY.
Charlie is a swash, or decorative modern, font.

● *The five Datafile fonts – there's also an oblique Priory*

***Baskerville SemiBold Italic rubbing serifs with* Neographik ...**
... and Pepita with Rockwell ...
... and Bembo Italic with Gill Sans

● *Just a few of the LOOKsystems Monotype fonts. Don't try this at home*

100 Monotype Typefaces, Pack1



● *D for decorative – or Datafile?*

Acorn-format conversions of outline fonts from other systems have been around for a while, mainly in the PD realm.

However, these were justly criticised for having incomplete character sets and lacking proper – or any – hinting and scaffolding.

This meant they couldn't gain the benefit of Acorn's sophisticated font management software and some were of doubtful legality as regards copyright.

Adrian Look of LOOKsystems has taken the preferable option of obtaining a licence to convert and market Monotype's library of over 700 fonts. Monotype have an excellent reputation and this first pack of 100 fonts paves the way for another font explosion on Acorn machines.

The package exudes quality, being very professionally presented in a wallet containing six disks and a 60-page catalogue. This booklet is filled mostly with type specimens showing each of the typefaces in four or five different sizes – an excellent idea because you can use it to help judge a face's appearance before trying it out.

My immediate reaction was surprise that there was no Times clone, which goes to show that we all have our silly moments. After all, Trinity – which is Times in all but name – comes as part of the RISC OS 3 rom, so there's no need for another version.

So just what *does* make a good set of 100 fonts? When you consider the enormous range to choose from, finding a balanced selection which will suit most purposes can't be easy.

First you need text fonts which will look good and stay readable in large chunks at fairly small point sizes. You also have to have a mix of serif and sans serif. Then there is the matter of historical period to consider – some faces have a modern look about them that makes them more suitable for some purposes than others.

Text fonts also come in different styles and weights – italic and bold, for instance – so you mustn't overlook them. As well as text fonts, you also need display faces to catch the eye and grab the reader's attention, or script faces to give that elegant touch.

On the whole I reckon that Adrian Look has made the best of a difficult job with his first selection, giving a good variety of font families where Baskerville rubs serifs with Neographik, Pepita with Rockwell and Bembo with Gill Sans.

There are a couple of joined-up script fonts – Swing Bold and good old Palace Script – and for an old-fashioned flavour there is Goudy Text with Lombardic Capitals. The Plantin Expert Set provides specialist characters for professional use.

The fonts as supplied are encrypted and decoding them requires a password from LOOKsystems before you can use the installation program to make working copies. This is easy to use and lets you specify not only the destination directory but also whether RISC OS 2 or 3 versions are needed. For the one price you get both flavours.

For those needing to provide PostScript output of documents, PostScript font names and encoding files are provided for adding to your *PSprolog* file. In practice I got by without using them, but it's typical of the quality of the package that they are there if you need them.

The shapes of the outlines are excellent, and the scaffolding and hinting allow accurate rendering down to about four points. It's hard to imagine a need to go smaller than this.

Because the fonts are conversions and not drawn afresh for RISC OS, some people might criticise them for certain purely technical shortcomings. Don't be put off them on this account – for practical purposes they are fine. Anyway, LOOKsystems have a policy of continuous development and will offer free upgrades if they improve the implementation.

Lastly I shall leap on to my hobbyhorse. Something that people often overlook is that fonts are subject to copyright just as much as programs – I know from personal experience how much work is involved – so do yourself, and the manufacturers, a favour and buy, don't just copy, your fonts. At these prices you can afford them, even if it means saving up for a while.

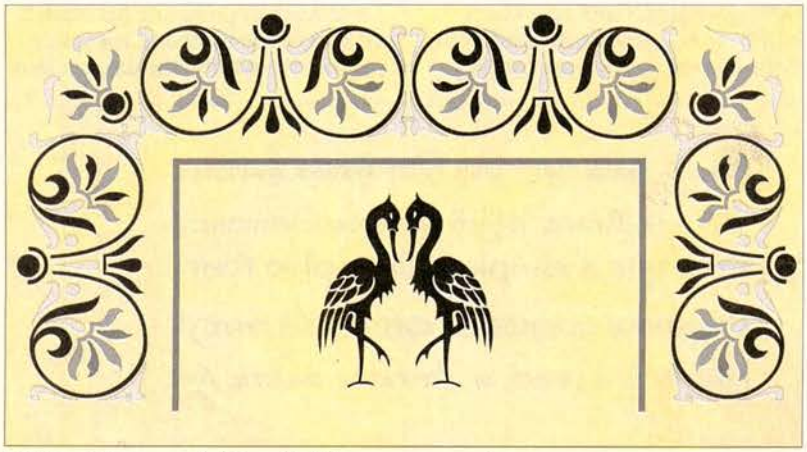
PRODUCT SPOTLIGHT

Product: 100 Monotype Typefaces, Pack 1
Price: £95 (inc VAT)
Supplier: LOOKsystems, 47 Goodhale Road, Bowthorpe, Norwich NR5 9AY.
Tel: 0603 748253

Summing up

Datafile's Gothic fonts and clip art contain a wealth of imagination stirring material that let you produce illuminated style manuscripts and other authentic looking documents in minutes – even without any native artistic talent. The original package was good value for money and the new set is even better.

LOOKsystems' first 100 Monotype typefaces is a well balanced selection and without doubt represents outstanding value for money. The biggest problem from here on is going to be the storage and management of large numbers of high-quality fonts. Unless, of course, you opt for LOOKsystem's Font Directory reviewed in the Shorts section of this issue.



● *One of the example files with bits you can recycle*

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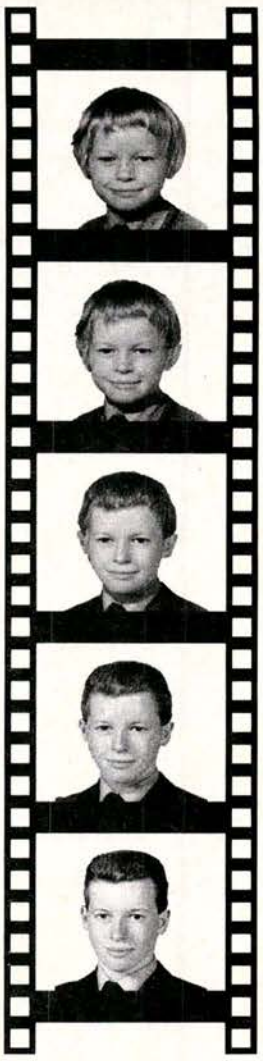

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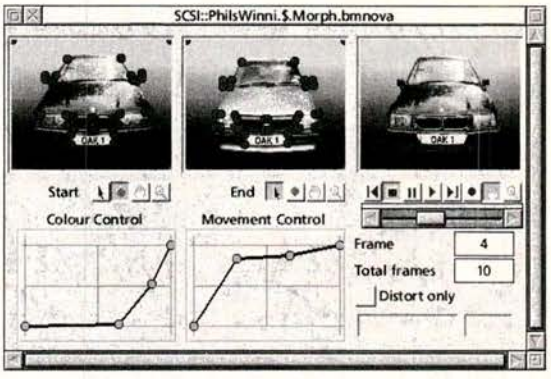

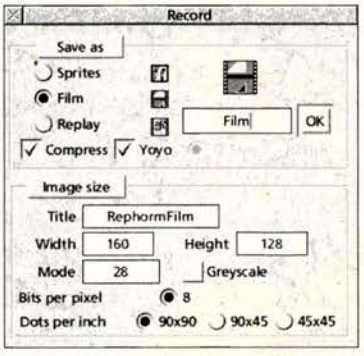

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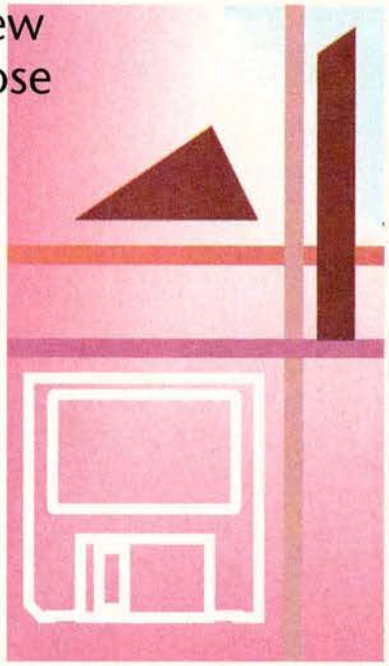
Blot on the landscape

Introducing Michael Rozdoba and a new regular column to help clean up all those hard-to-remove programming stains



AT one time or another many of us will have had to ditch a perfectly good programming concept or even a program already under development.

Frequently this can be due to a single seemingly insurmountable barrier, preventing successful coding of the idea, spilling the red Chianti of despair over what you know would have become the greatest example of programming since the dawn that brought forth RISC OS upon the world.

Well, the solution is at hand. Prepare to be underwhelmed in a dazzling display of programming dexterity. I am the stain remover to your vino! Bring me your corrupted offerings and I will cleanse you.

So how's that for an intro?

Perhaps I should have just said welcome to TechForum, a programmer's problem page. However, this doesn't aim to be just another column advising on those same old problems which come up time and time again, which anyone with a copy of the PRMs can answer.

Instead, we will try to tackle the kind of problems other magazines can't reach.

If you have any insoluble problems please send them in. Equally, if you have encountered and overcome anything that seemed insoluble, write in and allow me to spread the knowledge. That also goes for any hints or techniques you may have discovered or if you wish to air your views on a related matter.

Being high tech, we will only cover the 32-bit machines and I should emphasise that only programming problems will be dealt with, not hardware or using third-party applications.

This is partly because they fall outside the scope of TechForum, partly because my 8-bit machine retired to the loft several years ago and partly as my understanding of hardware extends only slightly further than the Conservatives' grasp of economics.

Assembler, C and possibly Basic programming are all potential fields, encompassing areas such as the Wimp, system extensions and anything else you can come up with. Remember, the success and longevity of TechForum rests on your interest and support.

Oops, looks like I've run out of space. Well, perhaps there's enough room left to cover one or two points, to give you an idea of the kind of thing we will be considering:

Hardware SWI Vector

All SWI calls are hardware vectored through location &00000008. By replacing the branch instruction at this address with a branch to your own (module) code, you can track, preprocess or replace any SWI call you like.

This allows modification to any part of the operating system. The module Desktop+, seen in an earlier issue, uses this method to modify some parts of the desktop.

Warning: You should only use hardware vectors when there is no other way, or you are willing to accept possible problems when a new OS becomes available. As is always the case, the lower the level at which you interact with the system, the more likely are future incompatibility problems.

The PRM contains a fairly good explanation of how to use hardware vectors (RISC OS 3: 1-28 to 1-32, 1-41 to 1-44 & 1-111 to 1-115). However it doesn't cover error handling that well.

If you intercept a call, you cannot assume X bit set status or that V is clear on entry, as you could if you were writing a module's SWI handler code. Instead, you must yourself check on the X bit of the SWI instruction when you need to return an error.

If this bit is set, you can return with V set and *r0* pointing to an error block, however if it is clear, you must instead raise an error directly. To do this, you need to generate a service call *Service_Error* and then call *OS_Generate* error. The module Zippy on MegaDisk2 illustrates this. Run *SHVErrors.!Demo* to see it in action.

Task Handles

Now a problem for Acorn to solve, alternatively this is your poser for the month. I for one would have assumed each task has a unique handle and whenever this is given to your code, corresponding to a specific task, it will always be the same. And this is what it implies in the manuals.

However, if you examine the value passed in *r2* to a Wimp post-filter (RISC OS 3 only), you'll find it differs to the handle you are given for the same task from, say, *TaskManager_EnumerateTasks*.

Can we have an explanation please?

Stop me, buy one!

Don't forget, 42 may be the answer, but we have yet to discover the questions. If you have a question, it is your duty to society to write in, so do it NOW. To: TechForum, Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

Watford Graphic Tablet

To all users who have encountered problems after switching to RISC OS 3, take a look at !Tablet and its contents, on MegaDisk2.

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Manipulating memory

Ben Summers explains the workings of the RISC OS heap manager

MOST programs need to hold data to work on, so they need to be able to allocate blocks of memory to store it in. High-level languages, such as Basic, provide some form of memory allocation although it is often rather primitive and when you write programs in assembler, you don't have any dynamic memory allocation facilities at all.

In Basic the memory allocation is very simple: You can create blocks of memory but you can't increase their size or give them back once you have finished with them – and in more complex programs you need to do this. When you need something a little better, heaps are an ideal way of solving your problem.

What is a heap?

A heap is simply an area of memory from which blocks are allocated and freed as they are required. The relocatable module area (RMA), for example, is a heap. When modules are loaded, a block is allocated for the module code and usually another for some module workspace.

When the module is killed, the blocks which it used are freed, releasing the space for other modules to use. Put simply, a heap enables a large quantity of memory to be managed easily. Many different types of separate data can be kept in it without conflicting.

A heap manager is a set of routines which control the use of memory in a heap. It keeps a list of blocks which have been used and a list of free blocks of memory (the free list). When a block is requested, the free list is scanned to find out if there is enough free space in one block and, if there is, the lists are updated and a block is claimed. When a block is freed, it is simply added to the free list.

Fragmentation

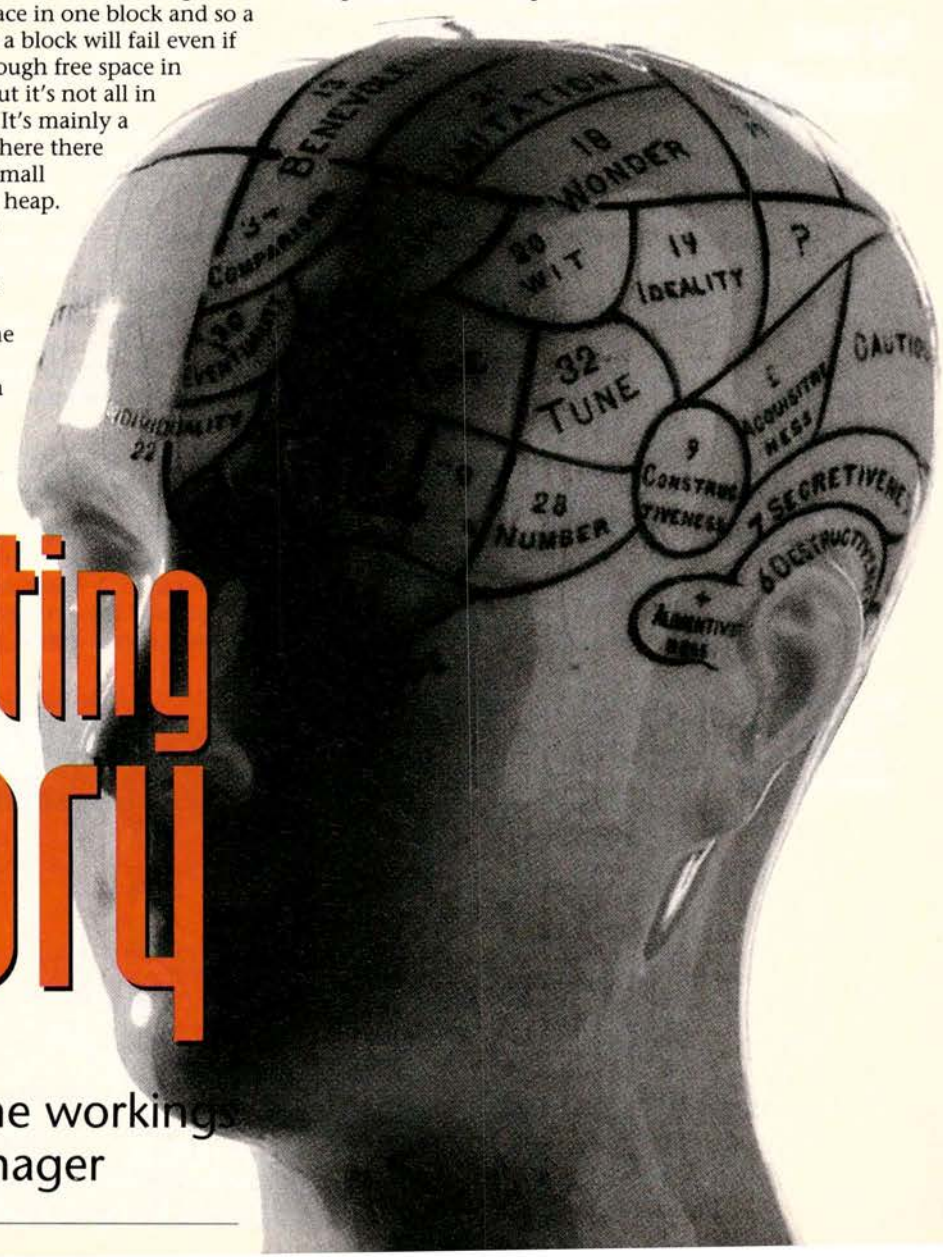
This type of heap manager has one disadvantage in that the heap tends to get fragmented. The blocks cannot be moved around to put all the free space in one block and so a request for a block will fail even if there is enough free space in the heap but it's not all in one block. It's mainly a problem where there are many small blocks in a heap.

RISC OS provides routines to perform many of the common functions a program needs. For example, the Font Manager allows all programs easy access to lots of good fonts and the printer drivers enable the programmer to print on just about any printer with the minimum of effort.

All these routines avoid repetition of code – making for fast program development and small programs.

The heap manager is one of these central resources. It maintains the structure of a heap within a block of memory provided by the program, and the program then asks the heap manager to allocate, extend and free blocks.

All data about the structure of the heap – which areas are used and which are not – is kept within the heap itself so it is not possible to use



all the space for data. For example, in a heap 1,024 bytes long, it is not possible to allocate a block of 1,024 bytes.

The first words in a heap, called the heap descriptor, contain a special identification word to enable the heap manger to check that you have passed it a valid heap – there's an offset to the first block in the free list, an offset to the end of allocated blocks in the heap and the size of the heap.

Each block in the free list contains a pointer to the next block and its size, and each allocated block is prefixed by its size. All this information enables the heap manager to know precisely which bytes in the heap are used.

The exact structure of a heap is described on page 1-349 of the RISC OS 3 programmer's reference manual and on page 777 of the RISC OS 2 manual.

However, you shouldn't rely on this structure when you're writing a program using the heap manager as it isn't guaranteed to remain the same in future versions of RISC OS.

Like all these things, if you don't rely on it, it will remain the same indefinitely, but if you do it'll change in the next minor update.

> If you don't rely on it, it will remain the same indefinitely

Using the heap manager

The heap manager is controlled by a single SWI which is in fact seven separate calls. This controls all aspects of the heap manager.

Which call you want to use is specified by a reason code in R0 and, as usual, the rest of the registers are used for parameters.

R1 is always the address of the heap, and where necessary R2 is a pointer to a block within the heap and R3 either a size or a change in size.

To set up a heap, you first need to claim a block of memory from the host language. In Basic you use the DIM statement.

In assembler, you will need to allocate a block of memory either by using the store initialisation statements, claiming it from the RMA or using the address of the end of the program code as the base of your heap.

The first step is to initialise the heap, you use the SWI OS_Heap with a reason code of 0. You need to tell it where the heap is and how large it is (in bytes). In Basic, to set up a 64k heap you would use code such as:

```
heap_size% = 64*1024
DIM heap% heap_size%
SYS "OS_Heap",0,heap%,,heap_size%
```

The DIM statement is a little different to the form used to create an array. The above example reserves a block of memory *heap_size%* bytes long and puts its address in *heap%* which is then the pointer to the block.

The heap manager checks that the addresses and size you have passed it are valid and then sets up the heap descriptor and it's ready for use.

Allocating a block

Once the heap has been set up you can claim blocks from it using a reason code of 2. There are two ways to tell if the attempt was successful or not. Firstly, you could use the SWI call as usual, and assume that claiming a block succeeded. If it didn't, an error will result and the error handler (set with ON ERROR in Basic) will be called. You could use something like:

```
SYS "OS_Heap",2,heap%,,size% TO ,,block%
```

Or you could use the X form of the SWI so the error handler is not called. If a block could not be allocated zero will be returned instead of a block pointer. The call looks like:

```
SYS "XOS_Heap",2,heap%,,size% TO ,,block%
```

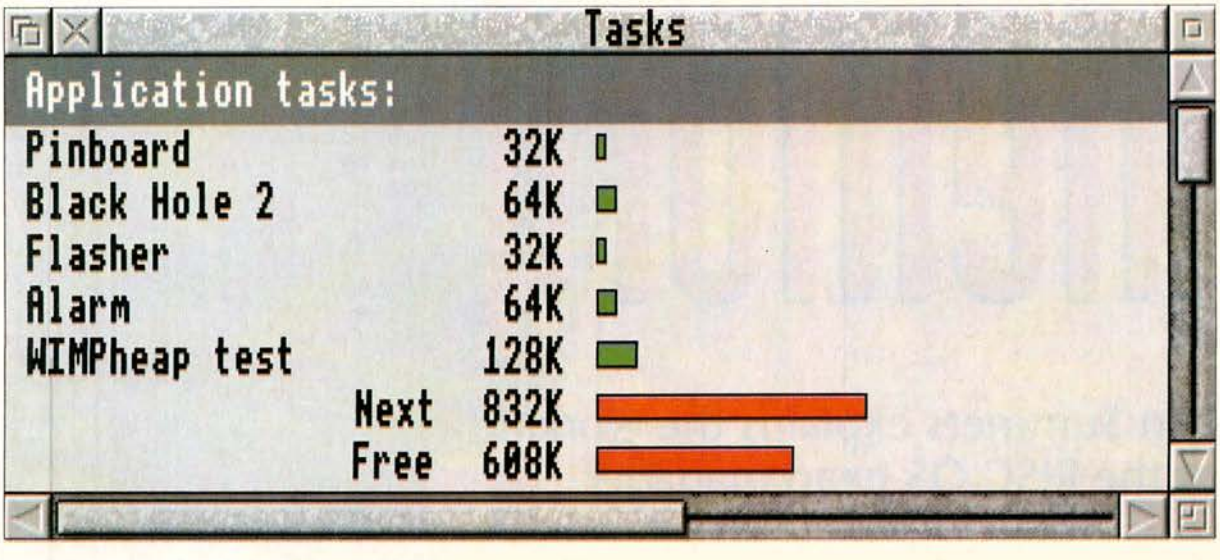
In both cases, a block *size%* bytes long will be allocated, and the pointer to it is returned in *block%*. In the second case, *block%* will be zero if no block could be claimed. You can test for this and program accordingly.

Using the block in Basic

Using an allocated block, either from a heap or using the DIM statement to reserve some memory, is different to using standard arrays.

Basic provides several indirection operators to access memory just as you would normal variables. However, you have to be careful not to exceed the bounds of the memory you are using.

You can use the ? indirection operator to access a byte, ! to access words (four bytes long), the $ for strings and | for floating point values (five bytes long). They are all used in the same way by prefixing a



● *The WHeapTest program shows how to change a WimpSlot in Basic*

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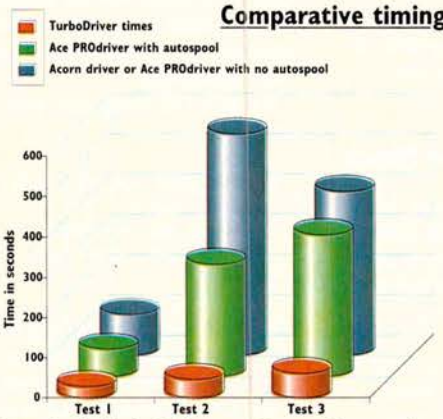
RISC OS 3

Turbo DRIVERS

The range of TurboDrivers has expanded to include versions for the Hewlett-Packard DeskJet and LaserJet range of printers, as well as the Canon bubblejet range. The latest release 3 versions are now fully RISC OS 3.1 compliant, offer new advanced features and are faster than ever before.

The bottom line is that if you value your time, the TurboDrivers are for you - they can render pages and give control back typically at between three and ten times faster than Acorn printer drivers or Ace PROdrivers. Indeed once the image has been rendered then the printing continues entirely in the background - as fast as the printer will go. This makes a large difference for just one page and an enormous difference if you are printing more than one copy of each page.

Comparative timings



Test 1 - A single DTP page of text and scanned graphic images

Test 2 - Two copies of a three page text and graphic document

Test 3 - A complex full page of graphics from ArtWorks

The timings indicate the time in seconds to get control back. All tests performed on HP DeskJet 500 printer using a 4Mbyte A440 with an ARM3 fitted. Other machine combinations show similar performance gains.

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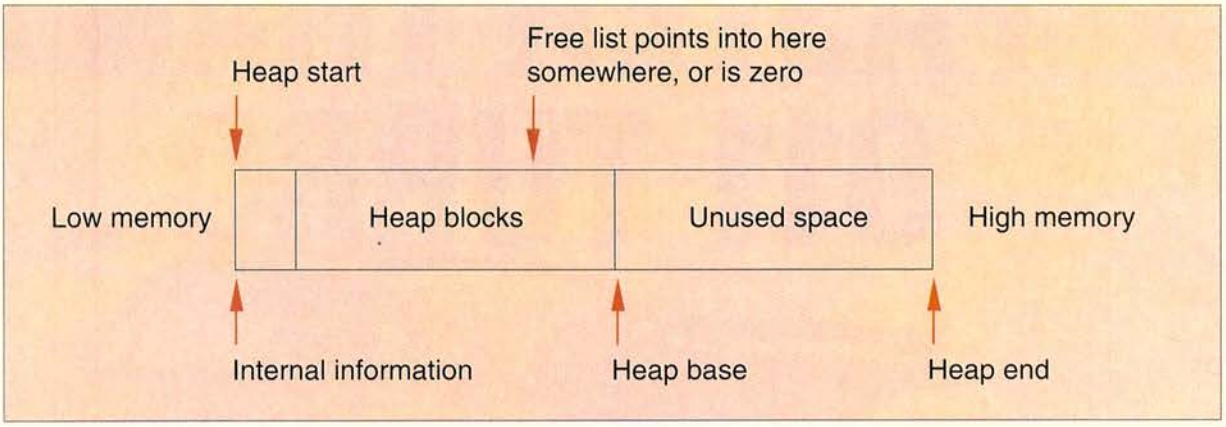

● *How the heap is delimited by pointers*

➤

pointer. For example, to set the first byte in a block to the value 42, use the statement:

```
?pointer% = 42
```

To access the word 32 bytes into the block, use:

```
!(pointer%+32) = 42
```

The ? and ! operators have a shorter form which is more concise. The example above could be written:

```
pointer%!32 = 42
```

Once a pointer has been *wrapped* with an indirection operator it behaves just like a variable in all contexts. The example programs on the MegaDisk show how to use these operators.

Extending a claimed block

The major advantage of using the heap manager over the Basic DIM statement is that once claimed the blocks can be extended – shrinking the block is extending it by a negative amount.

To do this, you use reason code 4. For example, to extend the block pointed to by *block%* by 1k, you should use a call like:

```
SYS "OS_Heap",4,heap%,block%,1024 TO
,,block%
```

&00	Special heap word
&04	Free list offset
&08	Heap base offset
&0C	Heap end offset

● *Format of the heap descriptor*

To shrink it by 1k, you would use:

```
SYS "OS_Heap",4,heap%,block%,-1024 TO
,,block%
```

When you are shrinking a block, the pointer will change to -1 if the block is shrunk to 0 or less. If it is possible that this may happen in your program you must check for this case, otherwise you will crash the computer when you access the block.

The calls shown above will call the error handler if it fails. The version which does not call the error handler is more complex as there's no indication that it failed in the returned parameters.

However, you can test for an error with an X form SWI by examining the processor flags. These can be returned in a variable by Basic after a SYS statement.

For this OS_Heap call, you could use:

```
SYS "XOS_Heap",4,heap%,block%,1024 TO
,,block% ;flags%
IF (flags% AND 1)<>1 THEN
  REM handle the error here
ENDIF
```

This code works by testing to see if the V flag (overflow – used to signal errors on return from X form SWIs) is set. It is returned in bit 0 of *flags%* in the above command.

When a block is extended, its location may change if the heap manager has to move the block within the heap when extending it, so you must always update the pointer.

The three examples above all update the pointer. If you extend blocks in your program relocatable data should not be stored in them, for example offsets to other blocks.

This is one of the simplest calls. The only time it will fail is when you've passed an incorrect pointer. It uses reason code 3, so to free the block pointed to by *block%*:

```
SYS "OS_Heap",3,heap%,block%
```

The heap manager has other calls to get information on the heap and to change the size of the heap. These are useful to more advanced programmers. You can find out how to use these calls in the PRMs.

Example programs

There are programs on the MegaDisk which demonstrate the use of the heap manager. *Example1* initialises a heap, claims a block from it, writes some data to it and reads it out again and then frees the block. *Example2* changes the size of the block and shows how to store a string and a floating point number.

As a more useful demonstration of the heap manager, I've written a short library called *WIMPheap* for use with multitasking programs. You can use it in your own programs.

It uses the heap manager to maintain a heap above the Basic workspace which will extend and contract as necessary. It demonstrates some of the more advanced calls of the heap manager. Read the file *WHeapUse* for details on how to use it in your own programs.

The application *WHeapTest* is a very basic application which uses the library and when run it places an icon on the iconbar then, every second, either claims, extends or frees a block at random until you quit it by clicking on its icon with Menu.

If you watch the Task Manager task display while it is running, you'll see its slot growing and shrinking.

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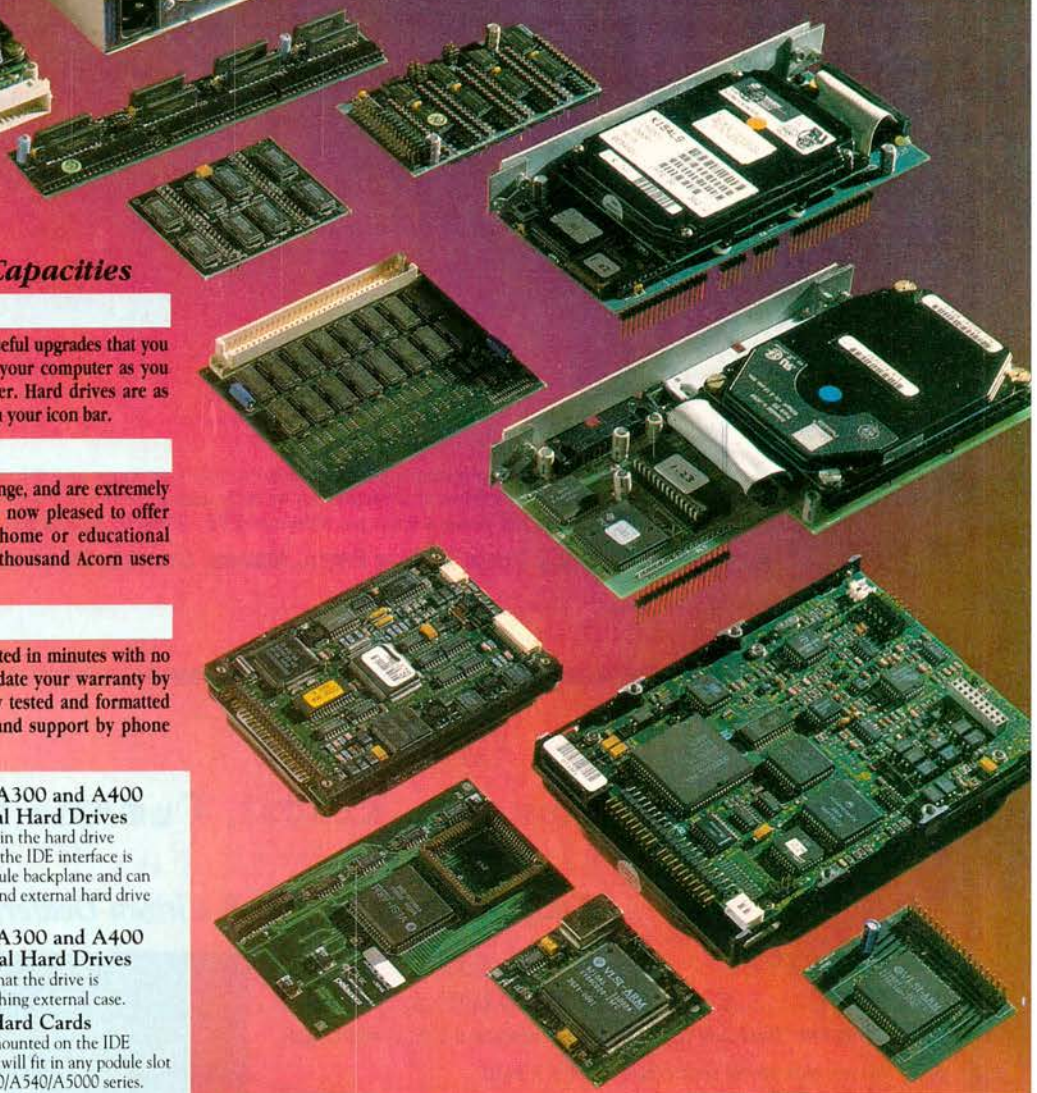

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Prophet 4 ACCOUNTS

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All the other Acorn magazines have also given Prophet top class reviews, but the people who really know how good Prophet is are its users (who are not without a sense of humour!).

The following extract is from a recent letter: 'Just returning Prophet V1.29 for upgrading in due course. Its getting better all the time...if you could get it to go out and take photographs for me while I go windsurfing I think that should probably do it!" - E Williams, Photographer.

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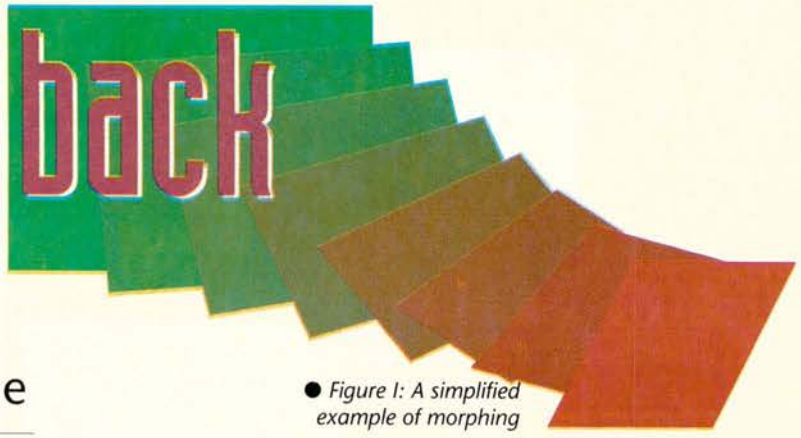
Morph bites back

Rob Miller returns to the cutting desk to take a look at a second morphing package



● *Figure I: A simplified example of morphing*

PRODUCT SPOTLIGHT

Product: Rephorm
Price: £49.95
Supplier: Oak Solutions, Broadway House, 149-151 St Neots Road, Hardwick, Cambridge CB3 7QJ.
Tel: 0954 211760

NO sooner does an original program appear on the Archimedes than along come a load more. Rephorm from Oak Solutions is the second morphing program to be released commercially for the Archimedes and is certainly not to be the last.

If you've spent the last year or so on a desert island, you're likely to have missed the spectacular effects achieved in TV adverts and feature films using morphing to perform visual tricks that pushed back the boundaries of animation.

A detailed explanation of how morphing works was given in the November issue of *Acorn Computing* but for those who missed it, here's a cut-down version.

Basic principles

Morphing uses two processes namely stretching and fading. First, a start picture and an end picture are divided up into areas – usually three or four-sided – to be morphed. If the pictures were of people's heads and shoulders, these areas might correspond to the eyes, noses, ears and mouths.

In order to produce in-between frames, each area in the first picture is stretched to the shape of the corresponding area in the end picture. Fading is also used to change the colour of each pixel in the first picture to the corresponding pixel in the final one. A white pixel would, for example, go through a series of greys if the corresponding pixel in the final picture was black.

Figure I shows a very simple example of a green rectangle *morphing* into a red parallelogram. This effect can be achieved using the Grade tool in Draw – supplied as part of RISC OS 3.

Rephorm, like other RISC OS programs, runs in the desktop. On loading, you're presented with the Rephorm icon which when clicked, produces the main Rephorm window.

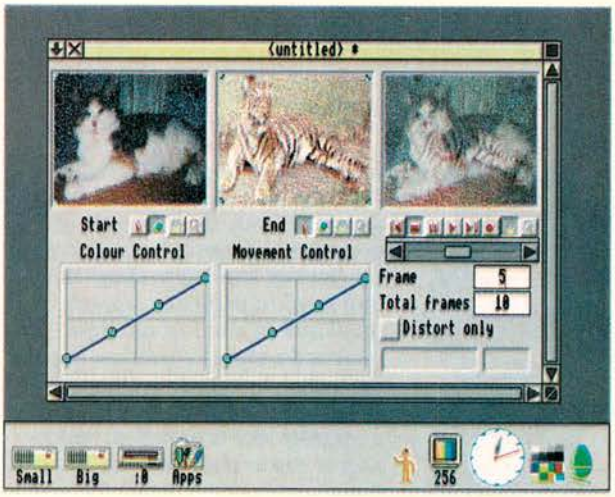
Unlike Morpheus, Rephorm does everything within a single window. This is divided into four main areas.

You drag and drop your start and end pictures into two of these areas – Rephorm will cope with current sprite files as well as Acorn's new 16-bit and 24-bit formats – while a third area is where the resulting *morph* image is displayed or as a *thumbnail*.

This leaves the fourth area for two control panels. Figure II shows the main Rephorm window after a start and end picture have just been loaded.

Unlike other morphing programs – and Oregan's Morpheus – Rephorm does not use a pre-set grid to locate control points. Instead, it allows you to add control points one by one, each time linking the new one with those already on the picture, to form triangular areas. These areas can be highlighted by toggling the triangle's edges on or off.

New points can be added at any time and existing ones can be deleted. This system makes it very easy to set up a control point *net* and is easier and more flexible than a grid. With a grid system, you have to add or remove whole columns or rows to insert or delete a single point.



● *Figure II: The main Rephorm window after loading two pictures*

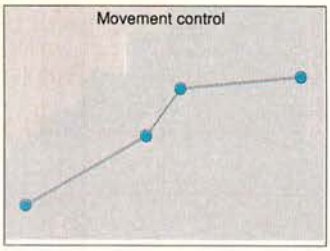
Once points have been added to a frame they can be moved around individually or in groups by selecting more than one at a time. In order to make editing clearer, each time you select a point in the start frame the corresponding point in the end frame is highlighted and vice versa. Figure III shows the start and end frame during point editing.

A special Rephorm file format is provided so that you can save any arrangement of control points you have created. The start and end frame pictures are also included in the file. Files can be loaded in at a later date where you can carry on from where you left off.

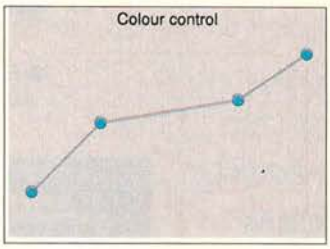
● *Figure III: The start and end frames during point editing*

Zooming in

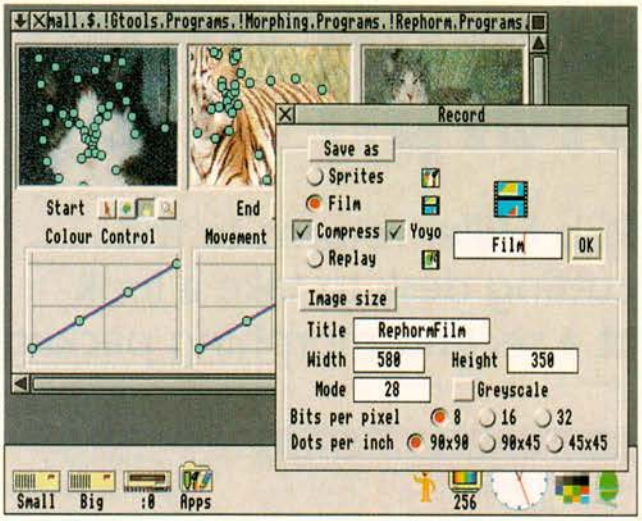
Rephorm works entirely within a single window and because of this the size of the start, end and in-between frames are



● *Figure IV: The Colour and Movement control graphs*



● *Figure V: The Record dialogue window*



fixed. This means that if you use Rephorm in a high resolution mode – such as Mode 31 – the scale of everything within the window is smaller and hence less clear. The tool icons in particular, appear very small indeed and I would have preferred a separate window or pane for each.

To make fine-detail work possible, a magnify tool is provided, which allows you to scale the start and end frames up or down in size. Enlarged frames then no longer fit within the space, so a hand tool is also provided which allows you to pan frames around to the desired spot.

Like the tool boxes, I would have preferred separate, scalable windows for the start and end frames. This would make using Rephorm much easier in large screen modes and would almost do away with the need to pan the picture each time you wanted to edit a different section.

Hot keys are implemented for each tool, making selection of each one simpler, although having the tools in a separate window/pane would have been easier still.

One distinctive feature of Rephorm is that it produces in between frames in *real time*. Every time you add a control point to a start/end picture, or alter either the Colour or Movement controls (see later), the morph image picture is updated. This can take some time, so an option is available to allow you to set the *quality* of the thumbnail image from Tiny to Huge.

The higher the quality, the longer it takes to update the thumbnail image. The thumbnail is only for reference and has no effect on the finished film, so you can put it at a low setting and then use the higher setting to preview the finished film.

As I've already mentioned, the morphing process consists of two different transformations: Squashing (movement) and fading (colour). Rephorm allows you to control the rate at which each one of these takes place by two special controls.

Colour and movement

In each case, the control is in the shape of a percentage change against time graph. These are shown in Figure IV. The rate at which the colour or movement in a picture changes can be altered by altering the shape of the line on the graph.

By altering the shape of each line, a number of clever effects can be achieved including fading from one picture to another, flipping a picture around a central axis, or rotating a picture. New pictures can also be loaded into the start and end frames and the current colour and movement controls applied to them.

Once you've set all the control points you require, you can record a film of the different frames that make up a morph sequence. Two file formats are available for films: Ace and Replay.

Ace films are fully compatible with the Euclid suite of programs and you can use the !Splice film editor – available separately – to alter the order of your film sequences. Ace films can be played back using the public domain !Projector application which is included as part of the Rephorm package. They can also be incorporated in such packages as Genesis and Titler.

Replay films are designed to be played back with Acorn's !Player application. They can also be incorporated into a number of other packages such as Genesis and Magpie.

The way they are stored means that they cannot be edited easily once they are created. The Replay format does however have the advantage that it can handle images up to 24-bit resolution – pictures with up to 16.7 million colours – making it suitable for film creation using 16-bit or 32-bit sprite files.

A final option is available that allows you to save out sequences of frames as individual sprites. This makes them easy to transfer to other applications such as paint or DTP packages. All three options can be selected via the Record dialogue box – Figure V. This gives control over such choices as bits per pixel (the number of colours used) and dots per inch (the quality of the resulting film).

Summing up

Although simple in theory, morphing programs are relatively difficult to use in practise. Rephorm's method of control point entry is by far the easiest that I've come across and makes creation of complex morphs very easy. Being able to move multiple control points at the same time is also a real boon.

Rephorm's speed is particularly good and the *real-time* generation of morphs during control point editing is a clear indication of this.

My only real moan with Rephorm is that it works entirely within a single window, making fine-detail editing difficult in high resolution modes. If the various sections were given their own windows, the ease of use of Rephorm would increase ten-fold.

Aside from that, the flexibility of the colour and movement controls, coupled with the relatively cheap price, make Rephorm an essential purchase for anyone with an interest in graphics manipulation.

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Once a knight alway

NIGHTSKY is the latest release from Clares and as far as I know only the second major astronomical program to be published for RISC OS machines, the first being Orrery from Spacetech.

Its purpose is to plot maps of the night sky as seen from anywhere on Earth at any time. It produces remarkably detailed maps that can be saved as sprite or drawfiles ready for importing into other applications.

NightSky does not attempt to plot a realistic view of the stars but will produce a map with stars whose colour is based on spectral type and size based on brightness. The display is rather colourful and full of information.

You have a rather novel way of specifying what map you want – both location and time are selectable. Locations can be entered by hand or you can use one of the editable locations in a configuration file. Your choices are *here now, here then, there now* and *there then*. It takes some time to figure it out but is quite a neat way of specifying the map.

There are two different sizes of star catalogue depending on how much memory you have available. The smallest catalogue has 2,704 stars and the larger 26,104, that will require 500k of memory. These stars go down to magnitude 7.5 – about three to four times fainter than you can see with the naked eye. Of course, there are options that allow you to set a limit on how faint a star you can plot.

As well as stars you can plot the planets along with the moon and sun, show the constellation lines and even draw in the constellation boundaries. There is also a collection of deep-sky objects in the catalogue like galaxies, nebula and globular clusters, which are shown as coloured symbols. Finally you can superimpose four different types of grid over the map to help you find your way about.

You can zoom up on a specific area of sky and examine, for example, the movement of the four largest moons round Jupiter. However, when you zoom in past a certain point the constellation lines and boundaries disappear.

This is meant to happen but personally I think it's wrong – I tend to get a sudden disorientation as the lines disappear. This is compounded by the fact that if one of two stars normally joined by a line is off the screen, the line is not drawn giving an incomplete feel to the map.

Moving about the sky is a little more awkward. The zoom box will allow you to change the field of view and pressing Adjust will centre the new map on that point.

Apart from that you have to plot a new map from a given view point. I found it best to first zoom out to the full sky and then home in on the area I wanted.

Another way to move around the sky is to use the find option to centre the map on a star or planet.

If a particular planet is not presently visible its menu entry is dimmed. I particularly like the way you can specify a star simply by clicking on the constellation and then the Greek letter.

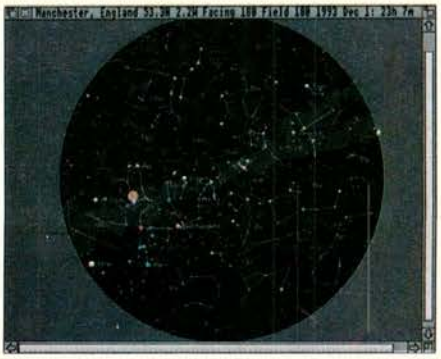
One particularly nice feature was the ability to plot the path a planet would make through the sky over time. This is initially set for a year but can be changed. With this feature you can see the retrograde loops made by the outer planets every year. Also you can see the strange contortions the inner planets make.

This option is available in azimuth and elevation, or right ascension and declination. The first is the path it would make if you viewed the planet at the same time each day and the second is the path it makes relative to the *fixed* stars.

NightSky has more than the ability to just produce maps – it can create animations as well. This will allow you to see the moon creep across the earth's shadow or watch the occultation of sky objects by the moon.

Depending on what detail there is in the map it can take time to generate and you have a choice of updating every 10, 30 or 60 seconds. If there is sufficient memory available the animation will use bank switching but this still leaves the problem of frame rate.

For a really smooth, rapid



● *The sky at night*

● *How many constellations can you spot?*

Star 63
Pointer altitude 73.8 azimuth 71.9
Pointer R.A. 13h 24m declin'n 55.1
star ζ UMa = Mizar
R.A. 13h 23.9m dec +54° 55.5'
magnitude 2.1 distance (pc) 18
absolute magnitude 0.8 surface temperature 9500K
luminosity spectral class A2
39 suns Field Tag

● *The specifications for star 63ζ UMa*

animation with lots of detail you are best storing each frame and using a separate animator to view the movie. There is an option to help you do this where each frame is automatically saved as it is produced.

I like the way you can precession the database. When looking at events away from the modern day the whole pattern of the sky is shifted round due to the wobble in the earth's axis.

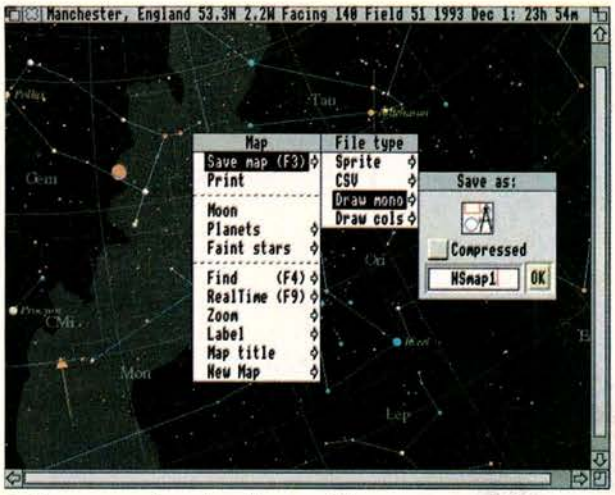
This means you can create very accurate replicas of historical events, like the star positions when Stonehenge was actually built or the conjunction that the wise men might have taken to be a sign.

change occur. This is linked into the constellation lines so you can see them crossing. By then we will need a lot of new patterns in the sky as most of the old ones will be distorted out of all recognition.

Another feature of the animation function is that you can choose the option of not wiping the frame for each animation. Therefore you can produce a map of, say, the position against the stars of the moon each day.

The settings of all the options can be saved as a file and loaded in at any time and allow the preparation of specific events.

Various examples are on the disk, like solar eclipses, historical



● *The save options should cope with most eventualities*

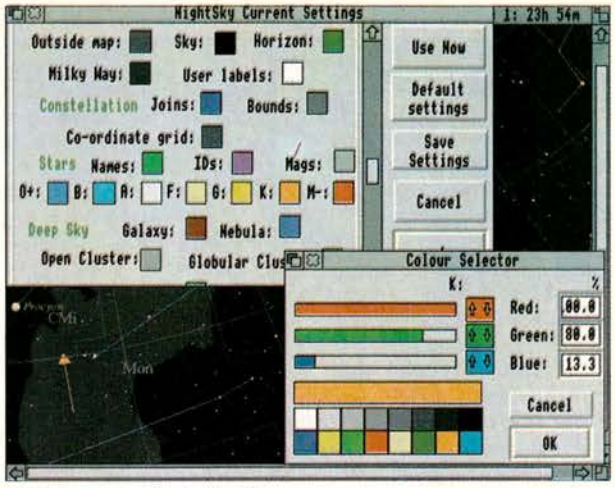
s a night

Mike Cook keeps looking starwards with a new planetary package

Most unusually with a program of this kind is that the real motion of some stars are accounted for. We only know this for a relative handful of bright close stars, but over the next 100,000 years some familiar constellations will be pulled out of shape.

By setting an animation time step of 10,000 years you can see the conjunctions and planet movement.

As a final trick NightSky can be made to search for occultations of planets and stars by the moon. This can take some time – on a fast machine it will take over an hour to search for a full year. The results are deposited in a text file and can be ported into a spreadsheet, DTP



● *Colour-coordinated settings*

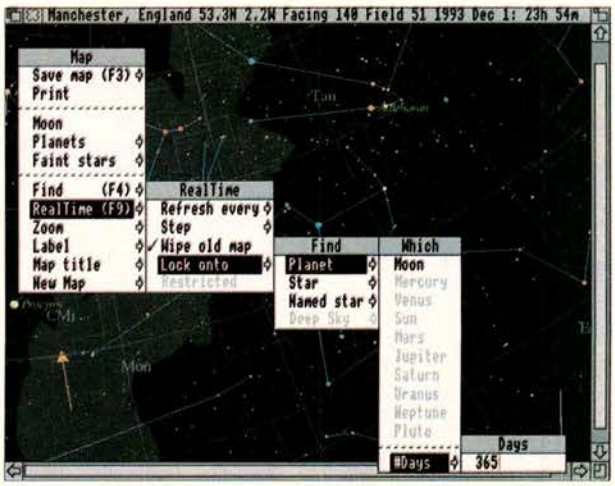
Summing up

NightSky is limited in function by only allowing you to see the sky from a specified point on earth at a specific time, unlike Orrery in which you can see the sunset from Mars. However, the functions that NightSky offers go much further than Orrery and let you produce more comprehensive results. The two programs should be viewed as more complementary than competitive.

Is NightSky worth the asking price? Most definitely. It will appeal to serious astronomers, students of astronomy and anyone with even a passing interest in the sky. It is only by using a computer with a program of this quality that you can get a feel for how the sky moves and the dance that planets make around the stars.

● *The search facility is very useful*

● *What do you know about Jupiter?*



● *The stepped menus make setting your views easy*

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A4000 Learning Curve .....1020.00 *(2Mb, 80Mb HD, Learning Curve & std. monitor)*	868.09
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The soft option

Clem Vogler continues his look at comms, examining the available software

SHED a tear for applications programmers struggling with *the software writer's dilemma.* I want the application to be easy to use so that users can plug in and go. Easy: Keep it simple.

I want to provide lots of features so that it's powerful and outperforms the opposition. Easy: Make it complicated.

With comms software there is another headache. Smart modem designers put all sorts of features in their models and give you chunks of NVRAM (non-volatile memory) to store your preferred set up.

Comms software writers can't bear you to program the modem yourself. They'd be out of a job if you did. They hide the commands away in modem drivers and dazzle you with feature loaded front ends. You bought a Ferrari – now they sell you a chauffeur to drive it.

I've looked at the two main comms packages for the Acorn 32-bit machines – ARCTerm7 and Hearsay II – as well as Chatter and Desktop Office's comms program.

As Acorn's marketing moves increasingly towards supplying machines with PC emulation, I've also taken a look at a couple of comms packages that run under the emulator – Terminal, supplied as part of Windows and the widely available Telix, a so-called user-supported package which can be downloaded for free evaluation from a range of bulletin boards.

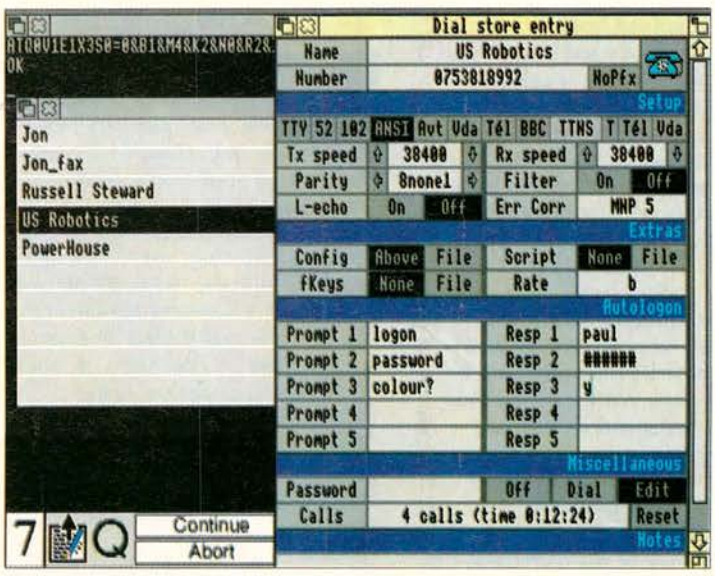
ARCTerm7

ARCTerm7 makes a worthy stab at squaring the circle of the dilemma. It's got lots of features, yet most are easy to use. Those that aren't, I've castigated below.

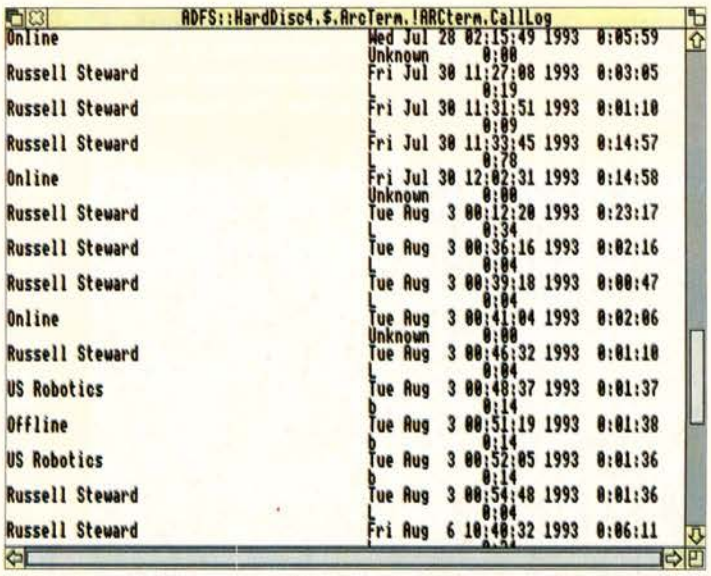
Comms software always needs more than its fair share of configuring. ARCTerm7 provides an accessible menu with well thought out configure options including a quick setup for users with handbook phobia or whose wives/girlfriends/mothers announce supper on the table at exactly the moment you finally make contact with that frequently engaged bulletin board. You can reconfigure while online – useful if you've set the wrong terminal emulation or whatever.

File transfer options are comprehensive. As well as X, Y and ZModem you can use Kermit, SEAlink Ascii and CET. The handbook is moderately helpful about the pros and cons of some of these. Others are simply ignored.

You can batch files for sending and define upload and download paths. A window keeps you informed of the progress of the ➤



● *Editing ARcTerm7's dialler directory*


ADFS::HardDisc4.$.ArcTerm.!ARCterm.CallLog
Online Wed Jul 28 02:15:49 1993 0:05:59
Unknown 0:00
Russell Steward Fri Jul 30 11:27:08 1993 0:03:05
L 0:19
Russell Steward Fri Jul 30 11:31:51 1993 0:01:10
L 0:09
Russell Steward Fri Jul 30 11:33:45 1993 0:14:57
L 0:78
Online Fri Jul 30 12:02:31 1993 0:14:58
Unknown 0:00
Russell Steward Tue Aug 3 00:12:20 1993 0:23:17
L 0:34
Russell Steward Tue Aug 3 00:36:16 1993 0:02:16
L 0:04
Russell Steward Tue Aug 3 00:39:18 1993 0:00:47
L 0:04
Online Tue Aug 3 00:41:04 1993 0:02:06
Unknown 0:00
Russell Steward Tue Aug 3 00:46:32 1993 0:01:10
L 0:04
US Robotics Tue Aug 3 00:48:37 1993 0:01:37
b 0:14
Offline Tue Aug 3 00:51:19 1993 0:01:38
b 0:14
US Robotics Tue Aug 3 00:52:05 1993 0:01:36
b 0:14
Russell Steward Tue Aug 3 00:54:48 1993 0:01:36
L 0:04
Russell Steward Fri Aug 6 10:48:32 1993 0:06:11

● *ARCTerm7 has a userlog which records online time and call cost*

A terminal case?

Windows is the GUI (graphical user interface) for MS-DOS and gives PC or PC emulator users a Wimp interface similar to the Acorn's.

Terminal runs under Windows, Windows runs under Dos, Dos runs on the PC Emulator and the Emulator runs under RISC OS.

Consequently you end up with a lot of layers and as each layer has to interpret and pass on instructions received a time penalty has to be paid when using stacked software like this. It's a tribute to the ARM's rapid processing power that, provided you single task, the delay is barely discernible.

That said, there's not much in favour of Terminal other than that it comes free – if you've got Windows. It's a basic comms package with fewer features than the competitors. Terminal emulations and file transfer protocols are limited. The all important ZModem is not supported and there's no dial directory.

Apart from letting you record your own modem initiation string, you can't program or write macros or logon scripts or do anything else bespoke. You have to mess about with the ports module in Windows Control Panel to define the default serial port – from the wide choice of one on the back of your machine.

Telix, on the other hand, is amazing value for money. You download it for free – assuming you have comms software to download with. The Canadian academics who supply it ask you to evaluate it for up to 40 days and send in $39 US dollars if you want to keep it.

Included in the download is a 200 page user manual and a 300 page programmers manual – check your paper feed tray is loaded before printing. There are drivers for hundreds of different modems. If you have a modern modem, make sure you download an up-to-date version (3.15 or later), or you won't find yours.

There are masses of other features and just two drawbacks. You have to run it under Dos and it's strictly character-based, single window stuff. If you don't mind that and know where to get a postal order for $39, then go for it.

➤

transfer. The acid test, of course, is whether it works. I was able to upload and download both text and binary files without difficulty.

There is a wealth of terminal emulations including VT102, PC ANSI, Viewdata, Teletel and BBC. This means that you should have an appropriate emulation for logging on to most hosts, including bulletin boards, databases, Prestel and Minitel.

Several of the emulations provide options to optimise colours and screen size or toggle # using Return – useful with Viewdata systems which use # widely.

There are lots of options to set things like redial delay, dial prefix – for use with internal exchanges – and a history option which recovers the last 256 lines after they've scrolled off screen. The options are kept in sub-menus and don't intrude unless you want them.

An attractively presented dialler directory has lots of editable features. You can set different comms parameters for each entry as well as program auto-logon responses to sweep through those impertinent questions that bulletin board Sysops like to waste your connect time asking. You can also password protect the number and/or the auto-logon string.

If you select host mode you turn your machine into a bulletin board giving your caller a log-in name and password. You decide whether or not to give him access to the operating system and which paths in your directory are available to him to download from.

The essence of good host mode software is that outside callers unfamiliar with the system should be able to use it. I invited a remote caller who had no knowledge of the Acorn system or ArcTerm to log in.

As it happens he was using a Unix workstation. The only help I gave him was that he could type ? for ArcTerm's help menu.

In 10 minutes he was able to explore my directory, download some files, write messages and initiate a chat. With some comms software you spend six months achieving that.

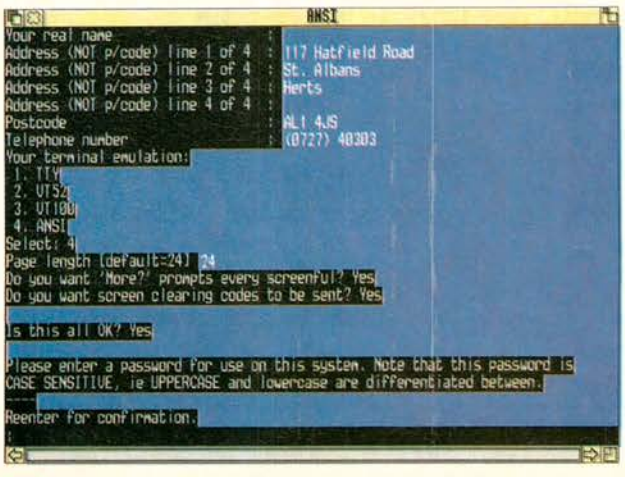
The front ends of some of ARCTerm7's utilities are a bit rudimentary. Take the user log. This is a useful feature which records the time and duration of each connection and calculates the cumulative phone charges for each number called.

You have to prime it with BT's call rates – it can't detect meter pulses. The log is implemented as a textfile located inside the ArcTerm application so you must click Shift+double-click on the ARCTerm7 icon to open its directory. There's no menu to display it.

The modem drivers are arranged in a similar way. These are files of Hayes commands which are run when the application loads and are supposed to provide optimum settings for ARCTerm to work with a particular modem. They select such

➤

● *Hearsay: Logging on to a bulletin board with Hearsay*


ANSI
Your real name :
Address (NOT p/code) line 1 of 4 : 117 Hatfield Road
Address (NOT p/code) line 2 of 4 : St. Albans
Address (NOT p/code) line 3 of 4 : Herts
Address (NOT p/code) line 4 of 4 :
Postcode : AL1 4JS
Telephone number : (0727) 40303
Your terminal emulation:
1. TTY
2. VT52
3. VT100
4. ANSI
Select: 4
Page length [default=24] 24
Do you want 'More?' prompts every screenful? Yes
Do you want screen clearing codes to be sent? Yes
Is this all OK? Yes
Please enter a password for use on this system. Note that this password is CASE SENSITIVE, ie UPPERCASE and lowercase are differentiated between.
Reenter for confirmation.

Configuration problems

I defy anyone to succeed if they follow the Hearsay Instructions to The Serial Port's high-speed dual serial port. What you have to do is swap the positions of the files !SerialDev and !Serial as instructed. Then edit !SerialDev so that the function *setserialdev(name, port)* found towards the bottom of the file becomes *setserialdev("SP_Dual",0)* or *("SP_Dual",1)* depending on which high speed port you are using.

Ensure that the application !SerialDev which came with the port software is seen by the desktop before Hearsay is run. Note that the application !SerialDev supplied by The Serial Port is not the same as the textfile !SerialDev provided with Hearsay.

The word processor for Acorn RISC computers

Impression Style is a new word processor combining the best points of all earlier word processors with many powerful features new to the Acorn platform. Impression Style is a word processor suited for all users - the occasional letter writer, student, small businessman or professional writer. It also incorporates many DTP features so that it can handle complex page layouts with ease.

Word Processing

Impression Style is a capable and very powerful product but it is also an extremely easy to use word processor. In order to make it simple to use, we have incorporated the very latest software technology, found on no other Acorn word processor, including two types of on-line help - interactive help and full hyper-text help. Not only can you tell at a glance what all the controls and menus do, there is comprehensive on-line documentation explaining the features. Simply double clicking on a topic or keyword will display an explanation - and of course you can do this on screen while using Impression Style.

IMPRESSION Style

It also offers drag and drop editing - the simplest, most intuitive way to edit documents. There is an integrated thesaurus and dictionary with definitions (another first for Acorn machines) both based on the highly respected Collins publications. Impression Style is the wordsmith's dream come true.

Modern word processing involves much more than creating and editing long text files - producing monospaced typewriter-like documents is often no longer acceptable. Therefore Impression Style offers page layout capabilities second only to the very best DTP packages and it does this without compromising the word processing abilities.

It allows graphics to be embedded into the text or placed anywhere on the page and includes another first for Acorn users - OLE or Object Linking and Embedding.

OLE EXPLAINED

If you want to edit the embedded object (this is usually a graphic, but it could be other data such as a table or equation) you simply double click on the data, which is then transferred directly to the appropriate editing application - for example !Draw. Once you've edited the graphic, simply closing the window will transfer the data directly back into Impression Style. This powerful technique couldn't be more convenient or easier to use.

Illustration shows new button bar enabled at the top of the screen. This offers direct, instant access to commonly used functions such as saving, cut, copy, paste. One button is the new zoom tool which allows ArtWorks style drag-zoom into any region of the document.

It also shows a word selected in the text and the pop-up thesaurus window showing a list of synonyms. Note the smart selection of root word.

There isn't room to cover all aspects of Impression Style, but some other features include:

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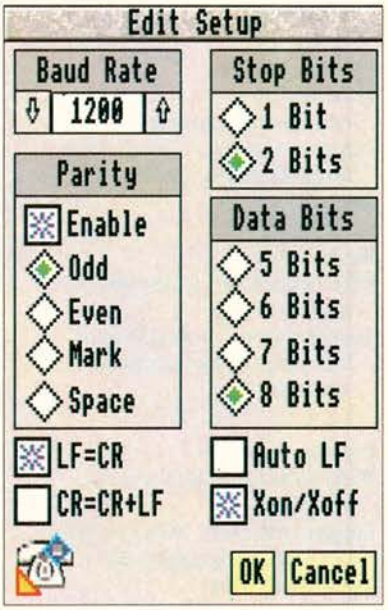
things as the type of handshaking and error correction used.

Running the driver script saves you having to enter the initiation string afresh every session. The trouble is, different users may need different features in their initiation string.

One person uses pulse dialling or wants auto-answer on, while another uses tone dialling or wants auto answer off. Hidden under three directory layers in the ARCTerm7 application are the text files containing the modem drivers.

The drivers are written in ARCTerm's script language which is rather like C. It's not particularly difficult to edit them and personalise your initiation string, but why not provide an initiation string editable window and a menu to select it?

It doesn't help that the handbook ignores the problem – though if you phone The Serial Port, they tell you what to do.



● *DTO's menus and options are straightforward*

Hearsay II

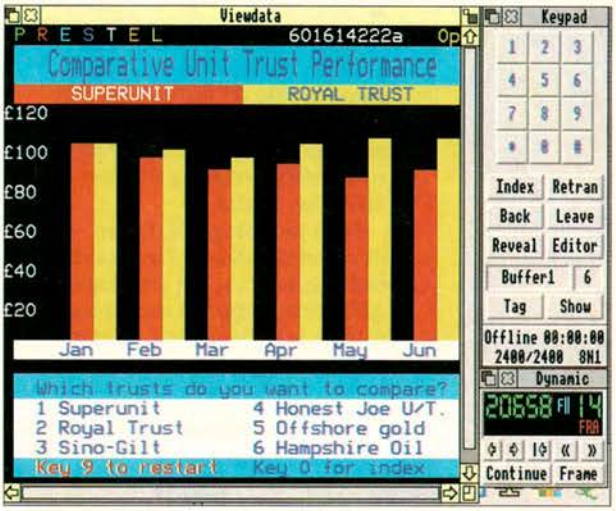
This is another strong contender supporting a range of text terminals including VT320, VT102 and ANSI as well as Viewdata and Minitel. A bonus is its Tektronix 4105 colour graphics emulation. The terminal windows are scalable.

Drivers are supplied for several popular modems and can be edited to accommodate others. As with ARCTerm7, this involves a certain amount of messing about with C programmed textfiles. The standard file transfer protocols are supported: X, Y and ZModem, Kermit, SEAlink and Ascii.

Those who suffer an irresistible urge to browse Australian bulletin boards during BT's peak period will be glad of the extensive facilities for automating responses. As well as auto-logon you have a macro editor that lets you chain Hayes commands, logon sequences and other structures.

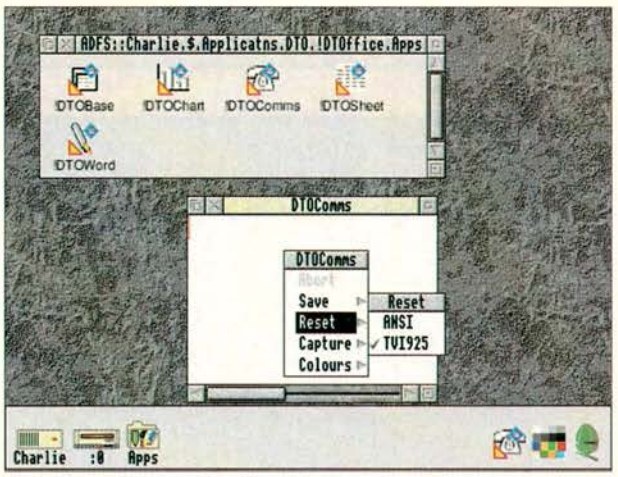
If this doesn't meet your needs you can delve into the C++ script language and write interactive programs. You create a library of these and the dialler directory can call them.

Loading them into the directory couldn't be easier, just drop the script icon on the dialler window. Whenever you dial, the script will run. The dialler directory also stores comms parameters – baud rate, word length, and the like – so once you've set it up you can get logged on with a single click.



● *Prestel is just one of the options Hearsay opens up*

It's difficult to decide between



● *You can interact with the other programs in Desktop Office*

DTO Comms

I've always liked integrated suites of business software. Running your comms package from your database makes sense. I've praised Minerva's Desktop Office in the past as a value for money entry-level package offering database, spreadsheet, wordprocessing, charting and comms facilities.

Limitations of DTO Comms include its dearth of terminal emulations – only ANSI and TV1925. Standard file transfer protocols are not supported, you have to use Minerva's quirky capture facility and there is no provision is made for batch transfers. There is no dialler directory either so you'll have to construct your own in DTO Base.

Only the most basic modem drivers are supplied – you'll need to edit the one that comes closest. As it's been around for a couple of years, DTO Comms doesn't know about recent developments like Acorn's device claim protocol or high speed serial cards so it can't coexist on the icon bar with other serial port applications and can only address the internal serial port.

I'm all for avoiding unwieldy menus with strings of confusing alternatives, but DTO Comms goes overboard on economy and offers few facilities. The largest menu is one to alter window and text colours – hardly a priority and making little sense of the purpose of full colour ANSI emulation which is supposed to provide you with true host colours.

The comms side of DTO is pretty basic. You can compensate for some of the deficiencies by building up your own databases and script files. If you already use the other parts of DTO this would be a reasonable approach. Those setting out from scratch will see it as too much trouble when better endowed alternatives are available.

ARCTerm7 and Hearsay II. Both perform the main comms tasks competently. They have broadly similar choices of terminal emulation and file transfer protocol, with neither offering the new favourite, Hydra.

Both provide good dialler directories, call logging, macro facilities and a script language. ARCTerm7 supports more modem drivers, but the generic ones in Hearsay work perfectly well while ARCTerm has a more versatile Host Mode.

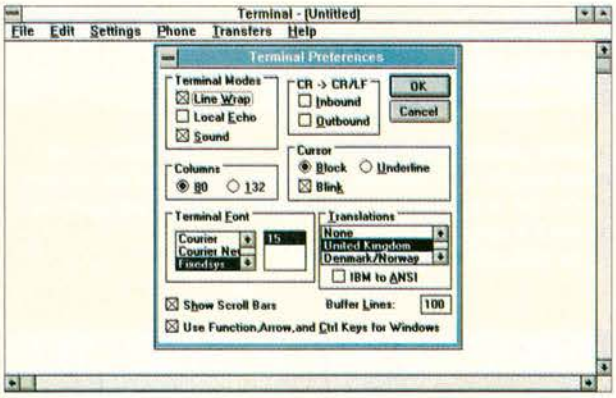
Hearsay has more printing facilities, including a toner-saving option to reverse video the graphics dump.

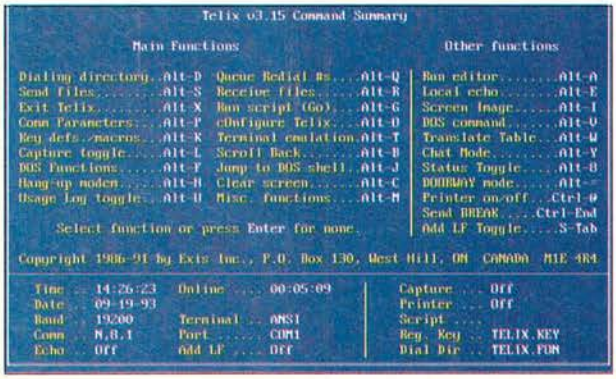
In an attempt to be different, Hearsay comes with an armful of utilities including David Pilling's Arc and Sparkplug for file compression/decompression and a new font from Tektronix.

Not to be outdone, ARCTerm7 also gives you Arc and Sparkplug. What a coincidence! As both packages use Acorn's device claim protocol, you could have both on your icon bar and they will amicably share access to the serial port, with the quiescent program's icon greyed out.

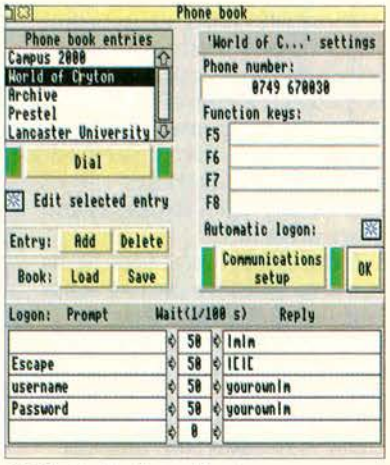
Both programs can use the high speed serial port which I reviewed last month. ArcTerm7 selects it with a menu option but Hearsay makes you work a bit harder.

● *Terminal preferences*





● *Telix makes you an offer you can't refuse*



● *Chatter's phone directory*

Supplies and suppliers

Product: Hearsay II
Price: £75 (site licence £375)
Supplier: Risc Developments, 117 Hatfield Road, St Albans, Herts AL1 4JS.
Tel: 0727 40303

Product: ARCTerm7
Price: £68
Supplier: The Serial Port, Burcott Manor, Wells, Somerset BA5 1NH.
Tel: 0749 670058

Product: Desktop Office
Price: Desktop Office £85 – includes DTO Word, Sheet, Chart and Base
Supplier: Minerva, Baring Crescent, Exeter, Devon EX1 1TL.
Tel: 0392 426160

Product: Chatter
Price: £37.50 (site licence included)
Supplier: 4Mation, 14 Castle Park Road, Barnstaple, Devon EX32 8PA.
Tel: 0271 25353

Product: Telix
Price: Shareware – US$39 after 40 days
Supplier: Various bulletin boards including US Robotics (0753 818992)

Product: Terminal
Price: Included with Microsoft Windows.
Supplier: Microsoft, Microsoft Place, Winnersh, Wokingham RG11 5TP.
Tel: 0734 270001

Chatter

Designed as a simple, cheap comms package, Chatter makes an intelligent stab at providing the comms features you need and avoiding frills. Viewdata, Teletel and a hybrid ANSI/VT102 are the only terminal emulations offered. 4Mation say that the hybrid is equally suitable for bulletin boards and DEC type hosts and point out that they supply a PC-graphics option so you can display ANSI colour when bulletin boards offer it.

If you require some of the more elaborate features of VT102 like Autoprint or 132 column mode you are unlikely to find the hybrid specific enough. You can select Campus 2000 which automatically switches emulations under host control and a utility called !SerialStatus is supplied.

This reveals the current status of your serial port connections – a sort of software equivalent of the flashing LEDs on the front of your modem. Useful for sorting out dodgy connections and other hardware gremlins.

Incomprehensibly, it omits the RTS and CTS lines. Although, or because, its handbook was the slimmest, it was also the best, with brief, jargon-free instructions, helpful appendices and a technical glossary, marred only by inadequate indexing.

X, Y and ZModem file transfers are supported. Generic modem drivers are supplied with an edit option for customising to your needs. The phone directory is basic, but adequate and you can store comms settings with each number together with your logon sequence. But there is no script language and no host mode facility.

Handshaking control was a bit baffling too. There is a menu option for Xon/Xoff, but you're not told whether switching it off leaves you with hardware handshaking or no handshaking. Unlike ARCTerm7 and Hearsay, Chatter can't access the fast serial card. However, Chatter is good value, especially for schools, for whom the inclusion of a free site licence makes it doubly attractive.

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Power to you

IN THE last two parts of this series we examined the concept behind computer-based sequencing and looked at basic facilities. Last month's article included a check list to help you decide which sequencer is the best one for you.

Sequencers are generally easy to use once you understand basic principles and the program's method of operation. However, they can perform many functions which are not always usefully obvious nor obviously useful.

So in this, and the final part next month, we have a collection of hints and tricks which will help you get more out of the software and turn you into a *Power user*.

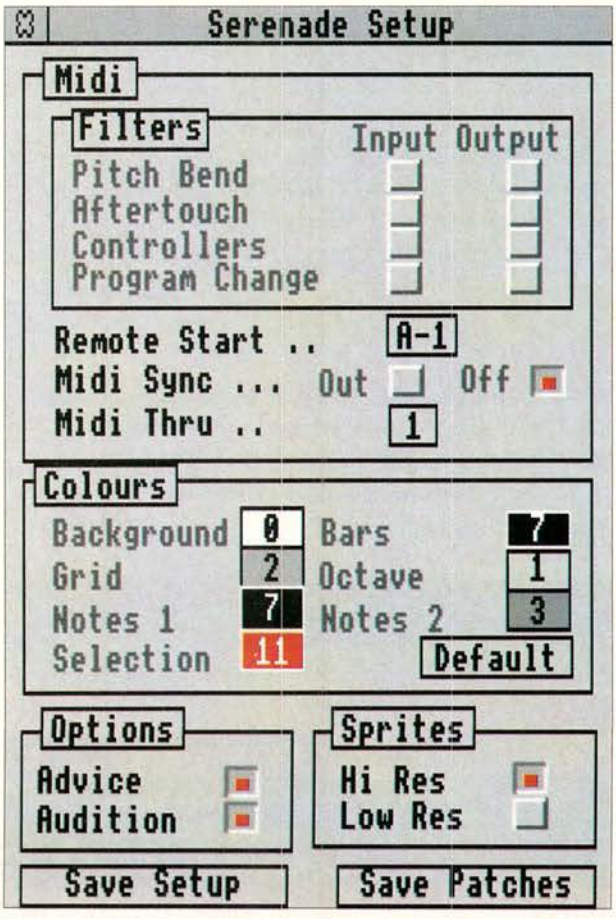
The first thing to do is to get your musical equipment and sequencer talking to each other. This doesn't just mean connecting the Midi Ins to the Outs.

If you have more than two synths or expanders, a Thru box and/or a Midi Switcher can save a lot of time and effort. If you find yourself fiddling around at the back of the equipment repatching leads, it's time for a Midi box.

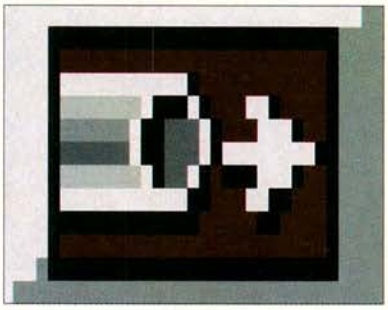
A Thru box routes an incoming signal – usually from the sequencer – to several Outs and is useful if you have several expanders. A Switcher box lets you assign individual Ins to Outs and saves an incredible amount of time repatching.

I use the Philip Rees 5X5 Switcher (£99) and V10 Thru Box (£39.95) and recommend them unreservedly. Philip Rees (0608 811215) also has a massive collection of other Midi boxes to solve all sorts of patching problems at prices from £14.95.

Ask for a catalogue which contains lots of excellent information about connecting Midi equipment together.



● *Serenade's Setup window houses a Midi Thru function which can retransmit all Thru data on a specific Midi channel. Here it's set up to transmit on channel 1*



● *You can switch Midi Thru on and off in Studio 24 Plus by clicking on the Midi Thru button*

Midi Thru

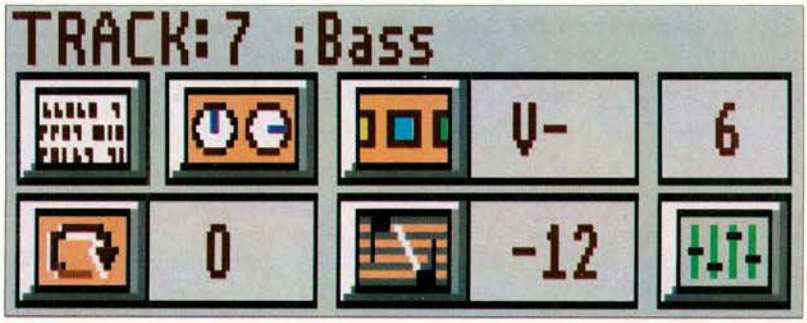
One of the most common connection problems involves getting a keyboard to record into a sequencer and play an expander, and getting the sequencer to play the expander, too. If you don't have a Midi box you can't do it without repatching unless the sequencer has a Midi Thru option.

Like the Midi Thru socket – discussed last month, the Midi Thru function in a sequencer passes on a copy of the signal arriving at the Midi In socket. However, it passes it to the Midi Interface's Out socket. This enables a keyboard to play *thru* the sequencer to an expander connected to the Out socket.

In such a case, you would also connect the expander's Thru to the keyboard's In. This will let the sequencer play *thru* the expander to the keyboard.

One more thing you must do is to set the keyboard's Local Control to off. This effectively disconnects the keyboard from the sound-generating circuitry so it will only play via Midi. However, not all keyboards have this function.

If you don't turn Local Control off, the keyboard will receive two sets of signals: One from the keyboard as you play it and another from the thru system. And you will



● *Studio 24 Plus' Track box lets you quickly make a transposition. Here the bass track has been transposed down an octave (-12 semitones)*

Midi

Ian Waugh lets you into the secrets of the sequencing trade

hear double notes – the ones you are playing and those arriving from the sequencer. Apart from sounding strange, this will halve the polyphony of your keyboard and is to be avoided.

Most sequencers have a Midi Thru function, some with extra facilities. Serenade, for example, lets you set the channel on which all Thru data will be transmitted, regardless of the channel of the incoming data. Inspiration has a Midi Patchbay which lets you map one Midi channel to another.

In the absence of any Midi boxes, the Thru function can make it much easier to record and playback music and means you don't need to repatch your system.

Ghost of a track

Some sequencers – although none for the Arc of which I am currently aware – have a ghost track function. This uses note data from another track but has other parameters of its own such as delay, transpose and so on. The advantage is that it doesn't use much memory and any changes to the notes in the master track also affect the ghost track.

Even if your sequencer doesn't have ghost tracks, you can still use the principles to create interesting effects. In lieu of a ghost track, you simply make physical copies of a track but remember, if you make any changes to the original you will also have to change the ghosts.

One of the most useful ghost track functions is to create layered sounds. If you have a piano line, why not add a hint of vibes, harp or string? Piano with strings is an old but effective combination. Use strings with a slow attack and they only come to the fore on long notes.

Transposition

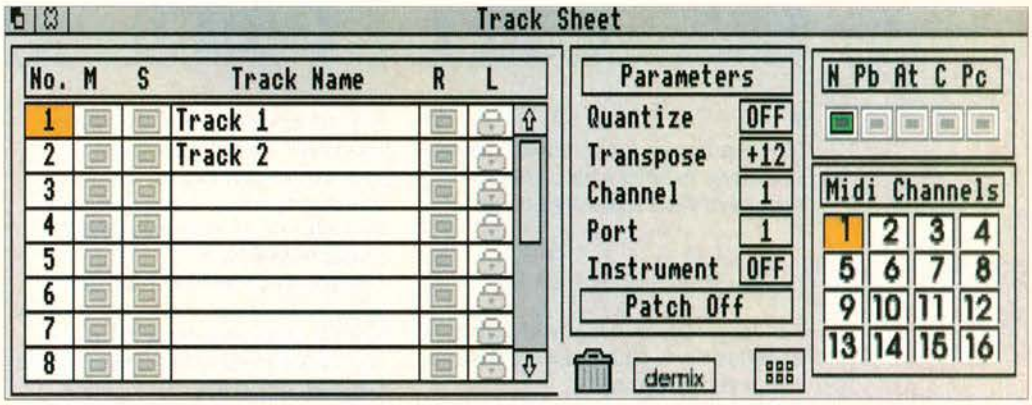
Two other useful functions you can apply to a ghost are transpose and delay. You can double up a sound by transposing in octaves. Transpose by a third, fourth or fifth for instant harmonies. This is particularly effective with vocal sounds.

However, if you want a harmonically accurate transposition you will have to edit some of the notes.

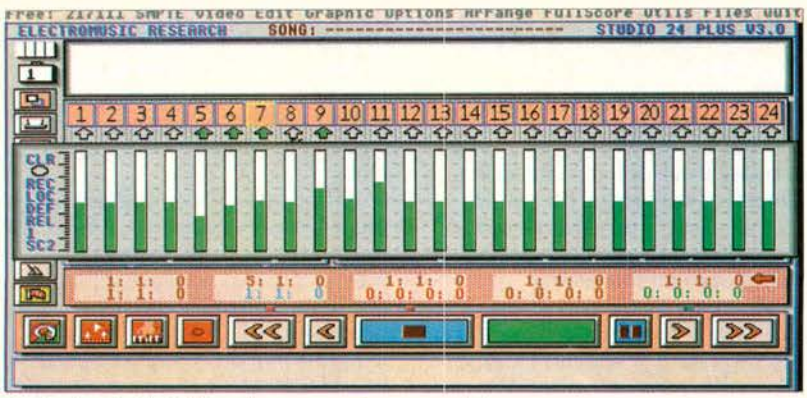
For example, this is a descending scale of C in thirds:

```
C B A G F E D C
A G F E D C B A
```

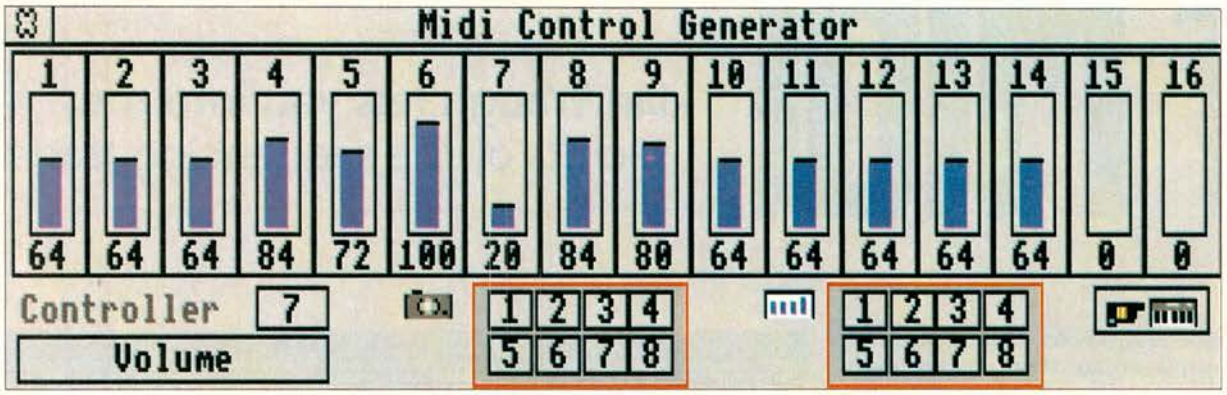
Usually you stipulate a transposition in semitones. A transposition of



● *You can transpose a track from within Serenade's Track Sheet*



● *Studio 24 Plus's Mixer lets you perform a real-time mixdown and records the changes into each track*



● *Serenade's Midi Generator lets you record volume changes and other Controller data into a track in real-time*

➤

four semitones, for example, would produce a parallel scale of G# so instead of the ideal scale you get:

```
C  B  A  G  F  E  D  C
G# G  F  D# C# C  A# G#
```

Similar problems occur with other transpositions. The *safest* are five and seven semitones.

On the subject of transposition, many songs give themselves a lift towards the end – the part where the chorus starts to repeat – by transposing up by a semitone or a tone. This is easy to do in a sequencer as you simply copy the chorus and transpose it.

Delaying tactics

Some sequencers have a delay or track offset facility which lets you shift a track backwards or forwards a little in relation to the other tracks. This has several uses.

A particularly good sound with a slow attack may start a little later than you would like. So, shift the track back in time a little so it starts to play sooner than the others.

If you move a drum track back – so it starts earlier than the rest of the music – it will give the impression that the rhythm is pushing the tune along. But don't move it too far otherwise it will sound out of sync.

If you have recorded the drum parts on different tracks, try moving just the snare, a little early to give the track a push. Alternatively, for a *lazy* feel, delay the snare a little.

Delay can also create Midi echoes. These have several advantages over echoes produced by FX units. For example, it's easy to regulate echo timing to fit the tempo of a song.

Try delaying echo tracks in increments of the beat – by 1/32nd or 1/16th notes, for example. Try values in between the beat. If a line uses 1/8th notes, use a 1/16th delay.

As Midi echoes are programmed into the sequencer, altering the tempo automatically adjusts the echoes, too – not so easy to do with an FX unit.

Also, you are creating first-generation sounds so the signal will be cleaner than one coming from an FX unit. And it frees up your FX unit for other things.

One of the attributes of natural echoes is that they die away. Reduce the volume of a track using a Midi Mixer such as the one in Serenade or a data transform function – which we look at next month. Alternatively, if the sequencer allows, apply a negative velocity offset to a track.

Using the ghost principle it's easy to create three or four echoes. But remember that unless the sound you are using is very short, each echo will use one note's worth of polyphony. An interesting possibility well worth exploring is to give each echo a different sound – you can't do *that* with an FX unit. Try a vibes echo on a piano line or a vocal chorus echo on strings.

Another very effective ploy is to pan the echoes. If the main line is in the centre of the stereo spread, pan the first echo hard left and the second one hard right.

Variations on this theme include creating a series of echoes which pan from left to right. Use different sounds for the echoes and you can build up a very complex sound – all from a single music line.

Put several ideas together and create transposed echoes, panned and using different sounds. You can also create interesting effects by applying delays to drum tracks. You probably wouldn't want to echo a whole drum track but a slap-back echo on selected snare beats or ethnic percussion sounds can be very effective.

Mixing it

Even though a sequencer is, in many ways, a replacement for an audio multi-track recorder, you will still probably want to record your finished music on to tape.

The usual procedure is to channel your instruments' audio outputs to a mixer and balance them as you record them on to a stereo master, be it a reel-to-reel machine or a cassette. Given the level of control most sequencers offer, you can do a pretty good job of balancing the sounds before recording.

Many sequencers now include a Mixer page which contains faders and pan pots which can be used to create a mix prior to recording to tape.

With Serenade, you can record the fader movements into a track so the process not only becomes fully automated on playback but is also easily edited should the need arise.

● *Next month is the final part in our Essential Music series and we conclude with a blistering array of Power User sequencing tips.*

● *A collection of Philip Rees Midi boxes*

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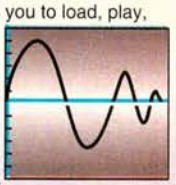

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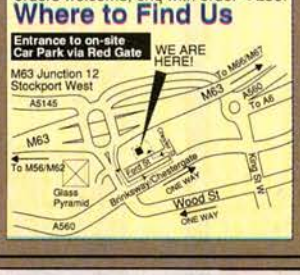

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Getting the right answer

Clem Vogler sees if Resultz will replace Pipedream in his favours

I AWAITED the arrival of Resultz with interest. Colton have previously brought us the excellent, if idiosyncratic, Pipedream. What features would they build into its replacement? Will Resultz point to new directions in Acorn software development?

A few minutes with Resultz reveals Colton's vision of the future. Applications software is to be integrated, object-oriented, page-based, style-driven and wysiwyg.

Resultz, like Pipedream, Eureka and Schema, is object-orientated. To move a range you select, cut and move it to the new location and then paste it back. Most spreadsheet software can handle operations on contiguous ranges – a single rectangular block of cells.

Resultz goes further allowing some operations like summing and averaging on non-contiguous ranges. Furthermore this is done elegantly and simply. To find the average of all cell entries in column A and cells B5 to E5 you select the average function from the list offered by the function button and draw the mouse pointer over column A. The selected cell references are automatically inserted in the function window.

Type in a comma and draw the pointer over your second range of cells to include these. Now press Return or click the tick and the result appears.

That most frequent of spreadsheet operations, summing a row or column, is even easier as an autosum facility is supplied: Mark the row or column, including a vacant cell at the end for the sum. Click the autosum button. That's it.

PRODUCT SPOTLIGHT

Product: Resultz
Price: £119
Supplier: Colton Software, 2 Signet Court, Swanns Road, Cambridge CB5 8LA.
Tel:Tel: 0223 311881
Requirements: 2Mb ram

Integration is Fireworkz

Resultz is part of a suite of integrated software. The wordprocessor Wordz is currently available. A database management system, Recordz, is being developed. Wordz and Resultz share the same user interface and page layout conventions.

Resultz and recent versions (1.04 and later) of Wordz can interchange files. Resultz can have several sheets open at once and you can cut and paste between them with a mouse drag and a click. You can also externally reference one sheet from another.

This means that the contents of a cell in one sheet can be made to appear *live* in another, with changes in data automatically reflected in the other sheet. However, these facilities do not apply between Wordz and Resultz.

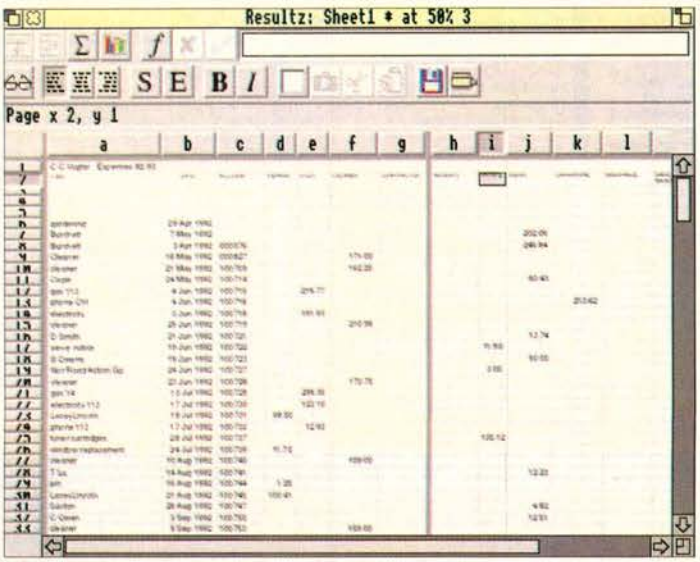
Integration at this level is promised in the shape of Fireworkz – a superset of Wordz and Resultz containing the functionality of both.

Other benefits of Fireworkz are more efficient use of memory than required by both individual components. By the time you read this, Fireworkz will be available and users of Wordz and Resultz can upgrade free if they own both packages or for the balance price if they have either one.

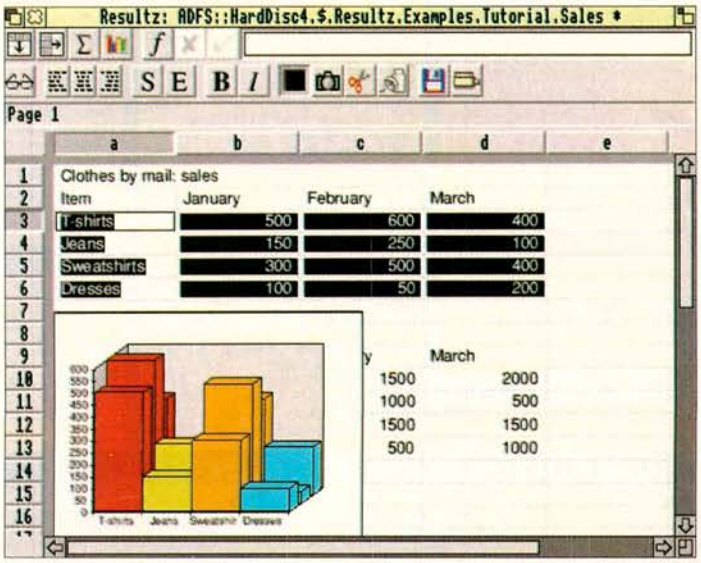
Page-based

As with DTP, the page boundaries show up on screen removing trial and error at hard copy time. If it won't all fit on the page, Resultz gives you some useful weapons.

For instance, you can preview in landscape mode and see if the last column is in. You can mouse drag the width of any or all the columns while autowidth sets each column



● *Page breaks show up in large spreadsheets, try it in portrait...*



● *On-board graphics sharpen your presentation*

to the width of its longest item.

Still too wide? Squash a column and the rows automatically deepen to allow the text content of a cell to spill on to another line. You can even change the column width in the body of the sheet.

As Resultz can read your printer driver's page setting and automatically match it, you don't lose the maximum printable area. The only feature I missed was *print at x%* found in Pipedream. Colton originally thought that scale printing broke the wysiwyg rules so they left it out. As it's so useful they now say they'll reintroduce it, together with a refinement to scale automatically to fit your paper size.

Style driven

A style is a collection of features applied to a spreadsheet object whether a cell or a collection of sheets. Typical style features include font size and type, colour and punctuation such as 1,234 or £1234.00. You can also decide to protect cells against deletion as well as how cell contents are justified.

Other applications are using the same approach and Resultz has powerful style editing facilities. In particular, you can overlay one style with another so that one collection of data could have a style, another could have a different style and a third which derived from the first two could have a composite style with features derived from both.

No search option exists in Resultz, though you get the Wordz one in Fireworkz. Memory management is feeble, with extra sheets grabbing space and usually not giving it back when they're closed. All the Acorn-based spreadsheet software suffers the same weakness and the cause is said to lie with RISC OS.

Neither can you use disk space to create virtual memory so the total volume of data you can handle depends on free ram. Recalculation was a bit quicker than with Pipedream and scrolling and loading a bit slower – fair enough with all that style data to handle. There is a nice fit to screen feature which works in all screen modes.

Summing up

I liked Resultz and will probably use it in preference to Pipedream, which has served me well for several years and whose oddities I have become accustomed to.

Its virtues are quick cut, copy and paste functions on a button bar. There are 189 in-built functions for masses of arithmetic, statistical, financial and other purposes. If this doesn't satisfy you, there are the customise functions.

There is no macro facility – a pity. But integrated charts with live updating are included with quite a lot of post display editing facilities including variable interval scaling of axes.

Chart templates cover bar and pie charts for plotting a value against a label, but there is an option to plot values against values – though, in common with other graphing software, the line plot joins the points up in spreadsheet order. Sort the *x* variable before plotting to get round this with the five level sort provided.

Don't expect to plot graphs of functions with this or any other presentation graphics package – it's only intended for pictorial display of data. The inevitable Pipedream penguins turn up as a bar-chart option. Horizontal bar charts are not provided – a serious omission – as anyone who has tried to read 20 or 30 truncated labels on the x-axis can testify.

Data types

The most basic task for spreadsheet software is to distinguish different data types. Fill a succession of cells with data items such as:

2	two	to be or not to be, that is the question	2.2.22

Resultz displays this as:

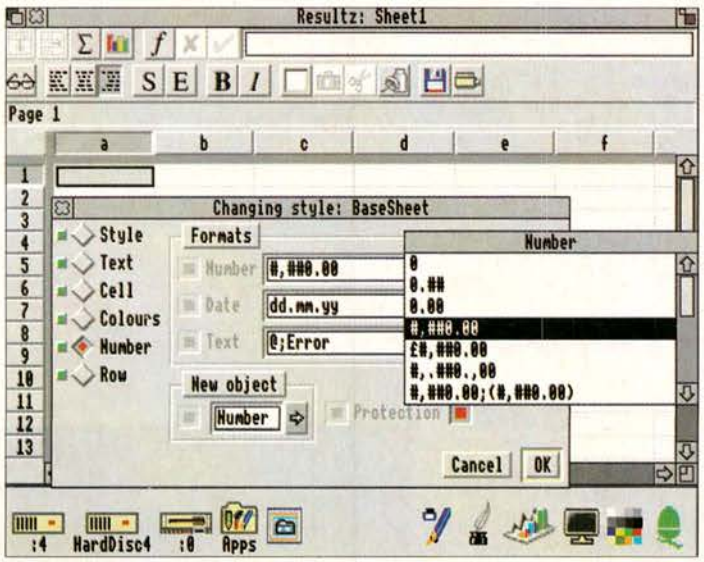
2.00	two	to be or not to be, that is the question	2nd Februa

showing it has intelligently assumed that 2 is a number to be displayed in the default numeric format of 2.00, whereas two is a text string, to be left justified. Its solution to the long text string in the third column is also intelligent – it increases the cell depth to accommodate all the words.

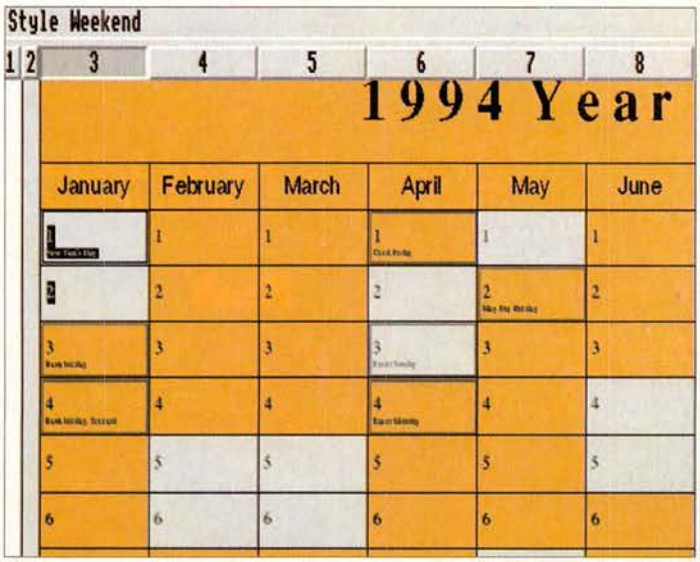
Some spreadsheet software truncates the string. When it comes to the last item, Resultz recognises a date and displays it in the currently selected date format. Unfortunately, its display procedure doesn't know that the format had changed and doesn't handle the display appropriately – with the truncated result you see.

After this blemish, Resultz atones for its misdeeds. Click on autowidth and everything comes right:

2.00	two	to be or not to be, that is the question	2nd February 1922



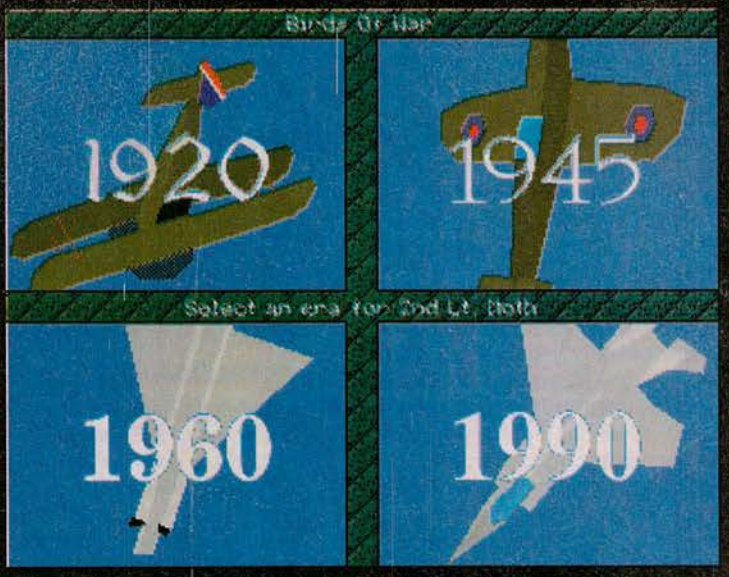
● *The style editor will arrange numbers to your liking*

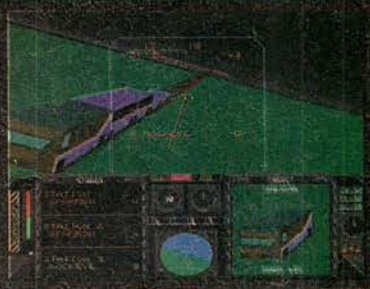


● *Typical use of a style attribute (colour) to distinguish weekdays*

Birds of War

'FIGHTER PILOTS WANTED – YOUR COUNTRY NEEDS YOU!'





It has taken **four years** of dedicated work by the author ***John Whigham,*** to make a flight simulator so sophisticated, it could probably be used by the forces . . . It's name is **BIRDS OF WAR**

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- No. of 3D Objects: Over 250
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- Briefing/Debriefing text: Over *86,000 words.*

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- No. of Aircraft Types: Over 50
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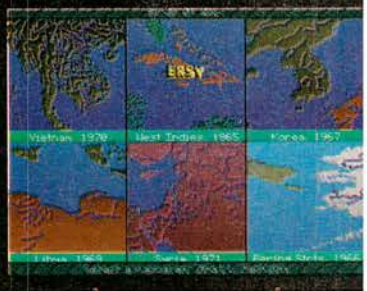

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VISA Access

James Pond 2: RoboCod

... a fish with a mission

IT'S nearly two years since James Pond 2's release on the Amiga – and as he makes his debut on CD-Rom on that format, RoboCod enters the 32-bit Acorn world. Is the gameplay still fresh, is the humour there and has it got that special something that keeps you playing?

I like my arcade adventures to start gently, giving time to appreciate the wit of the programmers, graphic artists and musicians. Little things add to a game of this kind such as a bopping James as he rides a lift or waits for you to do something, puffs of ice as he comes to a halt or the way he picks up speed down a steep slope.

You start outside the toy factory of Santa Claus in the frozen north. Now you could just walk up to the front door and enter a world of tiny penguins which need rescuing and snakes which require jumping on. Then collect all the toy making equipment and Christmassy items and the exit beacon will light and let you into the next level.

PRODUCT SPOTLIGHT

Price: £25.99 (inc VAT)
Supplier: Gamesware, Unit 26, The Bartletts, Hamble, Hants SO3 5RD.
Tel: 0635 299676

Alternatively you can explore the factory itself. Apples, hammers and points can be collected by jumping on to buttresses or stretching to reach the highest hand hold – in this, James is more like a lobster than a cod. You'll also find a host of doors barred and padlocked until you earn the right to enter.

Why are you there? Dr Maybe – first pun – has taken over and is producing mutant toys guaranteed to give everyone a thoroughly nasty Christmas. I mean how do you feel about huge teddy bears who take malicious pleasure in squashing you, or floating elephants firing animate objects in your general direction? I prefer my flying elephants pink or Dumbo-like.

All F – as opposed to Q – has given you is a suit to wear so you can operate out of the water and which has a special stretch ability. Okay so this is vital but a big stick might have been nice. You can try to jump on the jellymen, flying cards, evil-eyed trains and insect-firing buses but you'll lose more lives than you save and all you get for the effort is a pair of false teeth.

A neat trick I discovered was hanging on to a ceiling and letting go, falling with speed and increased weight on a particularly nasty mutant toy. You can also use your long neck and opposite scrunch-down ability for some nifty scouting.

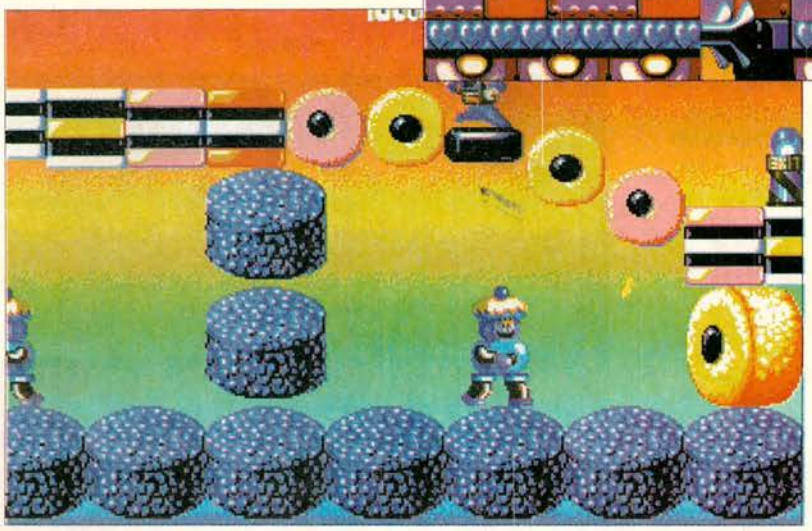
Around and about you'll find a series of aids, from wings to a car, a plane – and yes – a bath tub. These will help you traverse the rooms of the factory which constitute the levels. Watch the Databay for future hints and tips.

The secret with all platform games is explore, plan and never say die and there is a lot of this to do in James Pond 2 and I thoroughly enjoyed it. The game was paced just right and guaranteed to keep me coming back for more. A must for my Christmas stocking.

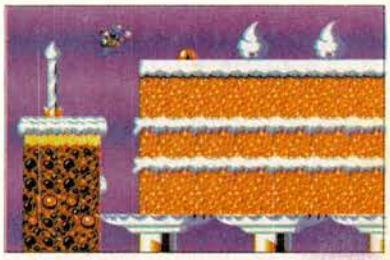
Teri Paul

● *Keep on hanging on. You don't need chocolate penguins, find some real ones*

● *Ever had the feeling that public transport is getting its own back?*



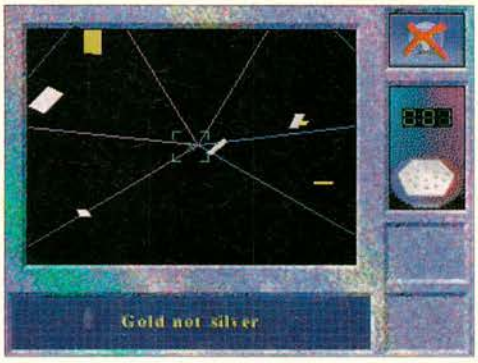
● *I learnt to hate Bertie Bassett in Zool, my feelings haven't changed*



● *Now jump for it. But is it the icing on the cake or the cherry you want?*

Crystal Maze

...this game's an automatic lock-in!



● *I hope I'm doing better than last time ...*

I HAVE been dragged away from the Medieval Zone against my will. In future I will not play this game with ***friends*** who insist on giving contradictory advice all the time. Anyway they've gone to watch the TV version so I'm going to spend some time in practice mode.

Crystal Maze is complete and has several features not mentioned before. Protection is via a wheel which consists of matching compass points, zones and colours and then you are launched into the evocative music of the TV programme.

Digital Jellyfish have kept the feel of the real thing while not forgetting that this is a computer game with all the inherent pros and cons. Considering some of the so-called TV conversions I have seen in the past this is no mean feat.

Once playing, the first trick to success is to choose a team carefully. Get a good mixture of intelligent, athletic and brawny types because if you pick a hulk to do a physical game you'll find it easier while using a brainy choice to tackle a mental game could win you that elusive crystal.

Next set the difficulty level low and choose the practice mode. You can also choose how you travel through the zones and where to start. The sampled sounds and effects are brilliant as are the graphics. You can turn these off but do listen to them at least once. Personally I prefer to keep them on – now there's a novelty.

There are 24 games in total which change with the difficulty level. You can play three games in each zone before being taken to the next. In practice mode you can play the same game over and over until you get the hang of it but you won't gain access to the dome at the end.

PRODUCT SPOTLIGHT

Price: £39.95 (inc VAT)
Supplier: Sherston Software, Swan Barton, Sherston, Malmesbury Wiltshire SN16 0LH.
Tel: 0666 840433

The end game sets you in the dome with two options: You can have one go at grabbing for gold adding all the time together or have six individual attempts. Take my advice and go for the latter as you'll be able to practise. Even so my score was abysmal at best. I really do need that practice.

The interface is nice and you can use the mouse or function keys to access the options, but the stars must be the games themselves. Most are versions of those from the series but that doesn't make them easy.

Sliding block puzzles are simple when you know how and Mumsie is usually a good way to get a crystal but there are automatic lock-ins.

Some games are extremely easy while others..., well it took me nearly all the time to work out what I was supposed to be doing.

The physical games are arcade platform types and you must take your character over submerging flotsam and jetsam or leap over deadly balls and others of an ingenious and dangerous ilk which an insurance company would never allow on a TV show.

● *You get one chance at this, make sure you choose the right team mate*

My favourites are the mystery games – possibly because I can do them better than the others – but there is something here for everyone regardless of age, interest or inclination.

There is so much in this that you can play it for hours without noticing. And remember it's only available on Acorn machines so you can thumb your nose at Amiga, ST and PC owners. I've got my copy, when are you going to get yours?

Pam Turnbull

● *Cryptic clues to test your knowledge in the Futuristic Zone*

● *This looks easy but is an absolute killer*

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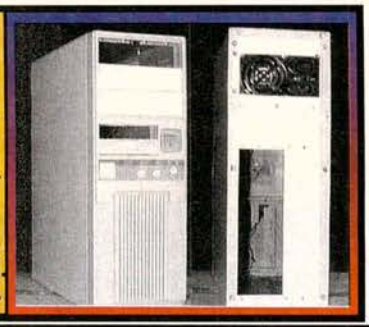

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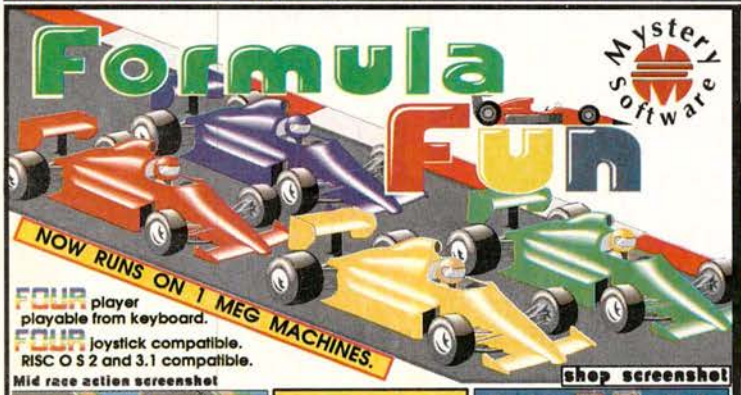
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...superior collection

● *The flip must be right or the ball will go slip sliding away*

SUPERIOR Software's Sam compilations have been popular for many years on the 8-bit machines and their first for the 32-bit Acorns was also well received and good value for money. Play it again Sam 2 for 32-bits, like its predecessor, contains four completely different challenges to keep you at the keyboard for hours and all for the price of what just one of them would have cost a few years ago.

Top billing goes to David Braben's **Zarch**, the game that made all the headlines when it first came out in 1987. At the time it was revolutionary and thoroughly unique in design and it can still pose a challenge today.

It's in the quick reaction, shoot-'em-up category in which you control a spacecraft above a colourful 3-D scrolling landscape. Nasties spray red gunge across the land which you must attempt to protect. The gunge affects different foliage in various ways: Some types remain untouched while others mutate or die. The more this happens the less your bonus score at the end of every attack wave.

Control of the craft is mouse only and it's very tricky to master. The left button provides the thrust to keep you above the ground, moving the mouse provides the impetus to go forwards or turn, while the right button is your laser cannon.

It's an enjoyable romp once you get the hang of the controls but it didn't have that addictive quality to keep me wanting to play on – or maybe it was just too difficult.

Next up is **Repton 2** and this guy should need no introduction. Your little green chum has been enlarged and enhanced for the 32-bit machines by John Wallace and you've got 16 screens around which you must collect diamonds by eating earth.

But that same dirt keeps up boulders which unless you're nifty with the keys means you get squished or trapped. The idea is to do to death the nasties which are flying around trying to kill and maim. Teleports will take you to safety or right into danger and you'll find keys ever so useful when coming up against gates and safes.

Repton has been around nearly as long as Acorn themselves and is still a good play and a welcome addition to any compilation.

The third game is **Masterbreak**, a combination of Trivia and Snooker. It's based on the Radio One DLT quiz and very similar to the coin-op game you can find in many pubs. Up to four can take part and answer questions from six categories: Science, Pop Music, Geography, Leisure, the Arts and History.

The first question – to pot a red – is chosen randomly and you must select the correct answer from a choice of four within a set time limit. Successfully pot the red and you move on to a coloured ball where you get to select the category.

The questions are of varying difficulty irrespective of which colour (subject) you choose. It's the time limit imposed that adds the pressure. Yellow ball questions have a reasonable period in which to work out your answer but selecting, say, a black ball question, sees the time indicator zip from start to end in less than two seconds.

The 32-bit graphics allow picture questions while the sound facilities also provide some of the music challenges.

Last up is **Arc Pinball** a very nice simulation of a pinball machine. There's everything you would expect: Bumpers, flippers, chutes, flashing lights and realistic smooth ball movement. Plus digitised video pictures to accompany the ball activity.

It's fun, addictive for a while and although not the greatest pinball sim I've seen it's not a bad filler.

All in all, a good collection that will provide something for everyone whatever your preferences. And, once again, it's excellent value for money.

Alan McLachlan

PRODUCT SPOTLIGHT

Price: £24.95 (inc VAT)
Supplier: Superior Software, PO Box 6, Brigg, South Humberside DN20 9NH.
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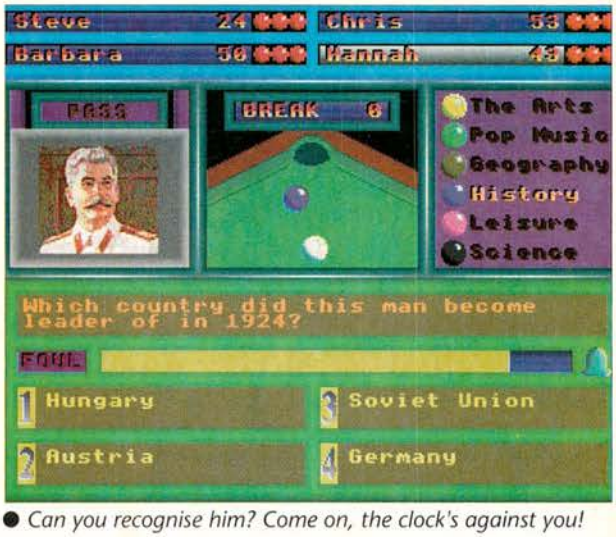
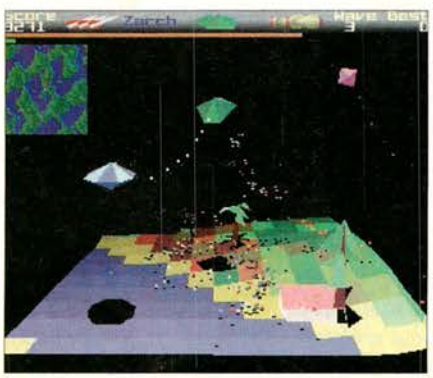
● *Okay so where are you going? Go to the teleport but acquire those diamonds and still survive*



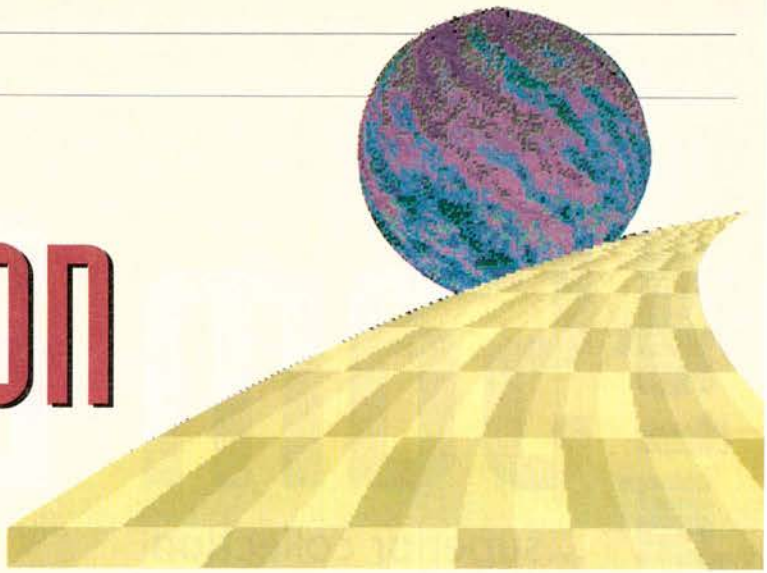
● *Can you recognise him? Come on, the clock's against you!*



● *Zarch is Lander with bells and whistles and there's still a knack to learn to master the controls*

Phaethon

... chariot of the gods



FOR those without a classical education, Phaethon was the son of Helios the sun god who borrowed his father's chariot – so now you know. Anyway this chariot with its internal gyroscope indicating your direction is manned by a mere mortal and depending on your manoeuvring prowess you can stay in the stars, riding among the planets or fall to ignominy in the blackness below.

My first response was to call it Fervour II but in fact it was developed independently of Clares and the authors decided to hold off for a year before releasing it. This has led to extra refinements and to the special PD version which is on this month's MegaDisk.

The music and sound effects are truly wonderful and you can customise the droid with extra engines, jetpacks and so on or just opt for the default on beginner, intermediate and advanced levels. You can even plump for a cabin deodoriser or change the colour of the droid. Personally I'm saving up my credits for the *superbouncoskin*.

Control is via joystick, mouse or keyboard and I preferred the last especially when sudden holes called for quick acceleration, braking, manoeuvring and jet boost. On each level you are given a quick map of the route and time to traverse this in.

What you aren't shown are the truly nasty areas where you find yourself, as on level three when you are sent back to the beginning – if you don't time your last jump just right. And believe me that is one of the easiest puzzles you'll face.

As you come across obstacles for the first time, text is embedded on the road to tell you what to do.

Luckily levels are passworded and if you complete the game, or give up in frustration, there is a built-in editor for you to design or adapt your own routes.

The motion is smooth, fast and very polished. More than 30 tunes and over an hour of continuous stereo music will keep your ears soothed – though there is an option to remove sound, effects or both – as well as fractal generated backdrops to extend your vision.

All was well and good, I was getting the feel of the controls and enjoying the scenery and puzzles, then it happened. Something shot at me ...

Yes, there are baddies. So in addition to some truly devious puzzles, invisible foes, almost impassable obstacle courses and razor sharp bends something is trying to annihilate you.

But then as you go up the eight zones through scenic, standard, mazes and puzzles the road becomes islands interspersed with huge leaps of faith as you hope the road will be where you're aiming and not a bomb which will blow it, you and the road to kingdom come.

The trick is to run the demo of each level first then take a good look at your droid's specifications. Some of the higher levels will transport you back to the shop so you can up your equipment – take my advice, do so.

Great. Okay back to the shop, let's buy some real machinery and go get 'em. Gentle puzzle game? Up to a point but then it gets really mean.

Pam Turnbull

PRODUCT SPOTLIGHT

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● *Yes, lots of score bonus tiles*

● *A line of cash bonus objects – you need all the help you can get*

● *A nice simple track – enjoy it while you can, because it won't last*

● *The scenery is beautiful and the music great, but what's round the corner*

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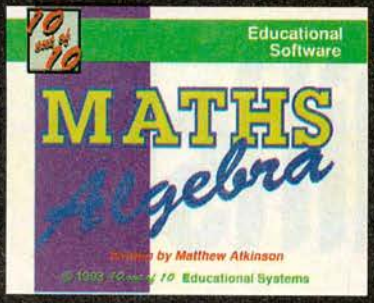

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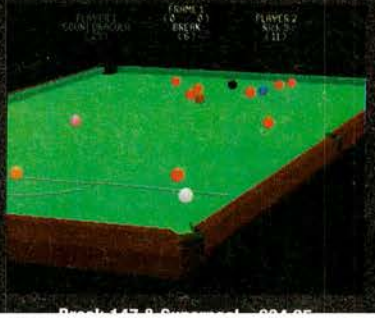

Elitists of the

I hope adventurers won't mind losing space this month, but I have an immense backlog of letters about Elite and ArcElite and this is an attempt to reduce it a bit: Some of them go far back into 1992. Normal service will be resumed next column.

Back to the rally competition for a moment: Clive Gringras wondered if any of you would be tempted to think laterally and try the journey from Arries to Diquer in reverse. One person did but, at 18.7 light years, Commander Liberator still didn't beat Chronon's 12.4 total done the long way round.

A word from Commander Froggitt for beginners: Spend cash on upgrading to a Mining Laser rather than a Beam Laser until you can afford a Military Laser. Remember: *Elite* always refers to versions of the game for Electron, BBC B and Master micros while *ArcElite* specifically refers to the Hybrid version aimed at 32-bit RISC OS machines.

Ross Little seems to have encountered the Cloak and Dagger ship on his Electron: That makes him the first. He also got thoroughly bashed: That is not a first. Commander Laurerandir, apart from saying thanks for the docking computer I sent him for ArcElite, wonders if the Elite Manual and the Flight Training Manual are the same thing.

It certainly is where I am concerned in this column. Incidentally, any ArcElite player still having trouble with manual docking need only write to me at Acorn Computing sending a formatted disk and return postage to sort out their troubles.

A constant query concerns the First Mission: Where and how is it triggered. You have to be in the right place – the first galaxy – and in the right circumstances (enough money and enough kills) to qualify: Perseverance pays, and you are given all the information needed for a successful enterprise.

A long letter from Peter Lennard deals with a variety of points. First,

Fishy goings on

LAST time, in my solution to Fish!, I left you in the boozer, having just bought a cylinder, only to have it snitched by one of the Seven Deadly Fins – your sworn enemies – and getting it back isn't going to be easy: Surprised?

East twice takes you to Shark Street – a shady area of town – and you now need to head north into the secondhand shop. The shop is pretty shady, and there before your very eyes is the fishton you last saw in Dr. Roach's lounge.

Steve, the cool catfish proprietor, offers you a fruity film which has just arrived. Buy it and the fishton: The radio case, also there, happens to be sold though Steve offers to deliver it later.

Out and east will take you to a hardware shop where you are offered a black plastic bag and the chance to buy a hyperdriver and a screwdriver: Take them. Now 109 clams the poorer, you must go out and southeast to Eelpout underground station and wait for a train. Stay on the train while it goes through a number of stations and eventually arrives at Opah University. Alight here.

Two moves out and two east will bring you to the University foyer. South then takes you to the principal's office where she tells you of an emergency: A junior member of your team has been suborned – nobbled, if you prefer – and has sabotaged The Project. You must trace the villain. There's no peace for those with fins.

You leave her office together but then you go east and south to the library where you are faced with a book and a problem: You are meant to look something up – but what? If you want to do it the hard way, save your position here and turn pages at random. Clues are provided.

However, for those of an impatient disposition, think what you managed to create after your antics in the Abbey and enter: *Look up *** in book*. Tear the page out and don't be surprised when you are then turfed out.

Going east down the corridor means your way is blocked by a door. Here is where the ID card you scrounged comes in useful: Put it in the door and it slides open, giving you the chance to move further east into Dr. Roach's laboratory.

Now enter the store room which is to the southeast, and there you'll find a protocopier with fantastical properties. Putting the picture into the protocopier will provide you with a genuine wotsit and 13 extra points to your score.

Return to the laboratory where, if you sit down, you can access a computer system: Pretend you are Dr. Roach and login, using the password *me* in order to learn a few things about the project and other matters as well as gaining points for accessing the system successfully.

Most important information is the list of missing items – a filter, photon bridge, focus wheel, tuned crystal and a case to keep them stable in are needed to replace the Stream Regulator.

There are other items of interest to be found as you browse through the system – perhaps one of the most amusing is the presence of some games including an adventure **Gilled of Thieves**.

And that's where I'm going to leave you for now.

orld unite!

Elite: When in Witchspace, once you have destroyed all enemy ships bar one Thargoid, start the Hyperspace countdown and also engage your docking computer: This should result in your ship trying to follow the Thargoid.

A small quirk in ArcElite means that you can do the following: At the point where you are in mortal danger of being blown to smithereens, lock on to the nearest system within hyperspace range and – at the last possible moment – press H and keep on pressing.

You should now be invulnerable, the hyperspace count will reset to 10 and then you jump. There is a small byproduct: Your energy unit will be disabled and you will have no energy until you have safely docked.

This method can also enable you to fly through planets. Personally, I time my jumps so that I have vanished at the critical moment and can then replenish my energy.

Peter has been asked to do one Mission – diseased Groigans – twice. Having done it once, he popped round all eight galaxies in short order and was asked to do a repeat performance. I think we have found the teeniest bug.

Incidentally, if while on this Mission, you get the warning *Thermal reaction in hold* you can prevent yourself exploding by pressing f12, pausing in the desktop for a few moments and then resuming the game. Sneaky.

He hasn't encountered any Generation Ships or Space Dredgers yet – nor have I – has any reader?

James Nott has a pile of questions – mainly concerning how to find or obtain such things as the C and D ship, the cloaking device, retro rockets and the ID system device. James has a Master 128 and therefore the following things need to be said in order to set him – and no doubt a number of other readers, too – on the right track.

The C and D ship is the name we have assigned to the following situation which has been reported by a number of readers: A blip shows on the radar screen but no visible ship is associated with the blip.

The player is often attacked, and can return fire, sometimes successfully, and the blip vanishes. This event is purely random and appears to have been the basis of a Mission that was never fully coded on BBC versions of Elite.

However, on the Atari ST (and I think Amiga) version of Elite this was transferred into a full-blown Mission. From time to time the invisible ship would appear – the cloaking device drained the energy banks – and thus could be destroyed fairly easily.

When destroyed, the ship ejected a cargo container and, if you scooped it up, the Cloaking Device was yours. How do I know? I have the Atari version of Elite as well as Elite and ArcElite.

James also asks why he's not yet seen various types of spacecraft on his version of Elite: Frankly I dunno, mate, they are there right enough because I've seen them myself.

A number of readers, including Andrew Churchyard, have encountered canisters that identify themselves as **MEGAWEED!** and wonder what it is. Just a bit of fun, really, you get exactly the same price for it as any other narcotic – and pay the same penalty, but it makes a nice random generated surprise.

Commander A'Tuin – who's a clever lad and enjoys Terry Pratchett, then? – alias Chris Harper wrote a long letter with some fascinating points. On one of his first ventures into Witch Space, instead of getting the normal failure message has had *Why was the kangaroo happy?* and *Why did the Groigan dance?* on his screen. That's a real blooper – has anyone else seen it? I certainly haven't.

Chris has also been bothered by certain holier-than-thou types. There he's been, happily reproving some nasty criminal, trying to teach him the error of his ways, when the message *Repent, repent, repent* flashes up on his screen.

He takes it a little hard, just as I have done when those Missionary-types interfere. Mind you, trying to be charitable, it also occurred to me that perhaps I was overhearing a message beamed to the criminal, urging him to make a deathbed act of contrition before it was too late.

Finally, Chris commented on the insertion of an extra proficiency level, namely Very Deadly. I reckon it was Clive and Warren's way of making us poor hopheads work harder before we could sit back and feel smug. I still think sorting out Zartid was no doddle, either.

Commander Nuke (AKA David Alexander) has made a common mistake, so I'll quote him verbatim in the hope that many of you out there will take notice.

When I got close to the sun I found a number of objects forming a large square. Each object was a tetrahedron made up of four equilateral triangles – a green one, a blue one, a pink one and an orangey-brown one.

Each object was roughly twice the size of an asteroid fragment. They floated in formation without moving, with five objects along each side of the square shape.

Each one could be destroyed with one laser blast or a missile, and when I scooped a couple up, there was no message saying what they were, and nothing registered as being in the hold.

David's powers of observation are acute: He has given an exact description of **Space Beacons** and two things need to be said about them. First, GalCop don't take kindly to the destruction of their pretty little warning signs: Fly through them, around them, admire them even but *don't* blast them.

Second, although they may not register as being in your hold, they are certainly there when scooped up and thus take up cargo space. In order to get rid of them, you need to eject one legitimate cargo canister for every beacon acquired. If your hold is full of Space Beacons you can no longer scoop up cargo and thus cannot get your hold empty either. So, the message is:

Don't meddle.

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Utilising PC drives

Mike Cook takes another look at your technical queries

AGENDA

- Using IDE drives
- Driving printers
- Degaussing screens
- Accessing raw sound
- Monitor resistance
- Bent ICs
- Adding second drives

Q I WANT to connect a hard drive to my A3020 and thought I could save myself some money by buying a PC IDE hard drive as I am told that an IDE interface is built into the A3020 and the A5000 as standard. With this in mind I bought a second-hand Conner CP 3111 112Mb 3.5in hard drive.

I opened up the machine before I bought the drive to see where I might be able to fit it. As the space under the floppy drive was 3.5in wide I thought I might be able to locate the drive here.

When I opened the machine to fit the drive I found that the 3.5in hard drive was 4in wide and that the circuitry at the bottom of the drive was 1 5/8in high. Both dimensions were too big for the space. The drive is 5 3/5in long which I suspect is also too big although I cannot get the drive into the space to see if this is true.

Is there a device available that would let me mount the drive in the podule area between the power pack and the floppy drive using some form of bracket to hold the drive off the circuit board? The drive appears to fit although I am worried that some of the components on the board might break off which is why I want a professional bracket.

Failing this could I mount the drive in some form of external case by taking a ribbon cable out of the ventilation slot or does any company provide a neater solution?

My second problem is connecting the drive to the computer. My hard drive has a 40-pin connector with one sawn off and a 14-pin connector three of which are sawn off. Along with the power connector which I am told is the same as the one for a 5.25in floppy drive. I have no leads to connect the drive to anything and have no idea where these would go.

Which leads would I need to buy and where would I put them?

There is a connector on the board near the floppy connector which looks similar to the connector on the hard drive but has 44 pins – it was not easy to see so this figure could be wrong – are more tightly spaced and none of them are sawn off. Is there a power connector on my board for the drive, do I have to open the power pack or do I need an external power supply.

With all these problems in mind is it worth me reselling the hard drive and getting a 2.5in drive which should fit, an IDE interface with the appropriate connectors or buy an Acorn hard drive? Please bear in mind that I am only 14 and have little spare cash. – **Joseph Kelleher, Gosport, Hampshire**

A *The reason why PC peripherals are cheap is that the quality of a lot of them is not very good. This is caused by the intense competition in that market and the fact that, by definition, PC users are not that fussy about quality – otherwise they would not be PC users.*

The A3020 does have an IDE interface built-in but as you found electrical and mechanical compatibility are two different things. I doubt whether anyone builds the appropriate connection cable you need and it's not a job you can easily do yourself. If ➤

Codes but no control

Q I AM using Draw on an A3000 and am experiencing some problems. When I try to print a picture the middle third section is shunted out to the left.

My other problem takes the form of lots of form feeds at the end of a print. Can this be reduced? – **I.F. Montague, Chatham, Kent**

A *What is happening here is that computer is sending out what it thinks are control codes and your printer thinks are characters. Therefore, before the graphics you get a number of characters printed and these are causing the displacement of sections of the graphics.*

You can cure this by choosing the appropriate driver for your type of printer. RISC OS 3 has many more to choose from than RISC OS 2 and will also enable you have to have more control over the margins.

There is even an application to let you choose your own control codes if the supplied drivers don't do the job. Using the earlier RISC OS 2 operating system you have a much more limited choice of printers. However, it is worth trying different ones to see if one suits yours.

Quality sound

Q I HAVE seen many articles in the Acorn press which say that there is a way to access an unfiltered and higher quality sound output. I excitedly read your reply to a letter in the February 1993 edition of *Acorn Computing* telling Mr Buckland how to access the unfiltered channels on his A310.

Unfortunately, I presume the chips are named differently as I can see no chip called PL2 on my issue A3000. I'm okay at electronics and would dearly love to get the higher quality sound to play through my hi-fi which could handle the higher frequency sound. It would also impress one of my Amiga-owning friends. – **James Cooper, Chedworth, Glouces -tershire**

A *Look, let's get this straight: Acorn had a system that would give high quality sound then they added extra components to make the sound low quality. Doesn't sound very likely does it?*

The extra filtering is there for a reason and that is computer interference. All computers generate electrical noise and this can be picked up by audio amplifiers in close proximity. Most of this noise is quite high in frequency, hence the need to filter the signals.

Now you can bypass the filters and get a signal with a high frequency response but this is no reason to think it will also be interference free but you might be lucky.

However, having said that, if you do want to pick up the signals before they are filtered and buffered in the A3000 you can do.

The raw audio signals are on pin 1 (left) and pin 9 (right) of IC39 – that's the LM324.

➤

it was easy to fit a PC drive to Acorn machines there would be quite a few Acorn dealers offering to do it for a ***modest*** *sum.*

I think your best bet is to go for a drive specifically designed for the Acorn machine you intend to use it on. After all, quality is something that needs paying for.

Resistance is useless

Q FINANCES – or lack of them – have dictated that with my A3010 I continue to use a Fergusson MC05 Monitor Television originally bought for my BBC B.

Using a Scart lead supplied by the local dealer I switched on only to get a totally burned out, blinding white screen with unstable vertical hold. I returned the lead with the relevant pin out diagram and they inserted a 300ohm resistor in series in each of the colour signal lines – pins 7,11 and 15 – to drop the signal voltage to 0.65v and this has made some slight improvement.

With the contrast turned full up and the brightness turned all the way down, it is now usually possible to read the screen. However, the screen and colours are still very washed out and not really suitable for word processing and so on with the vertical hold still unstable. This effect is not generally evident when the screen is highly coloured as with most games programs. Can you help? – **Michael Brydon, Millom, Cumbria**

A *I mentioned in my article on Scart plugs – The Micro User, October 1990 – the use of series resistors to cut down excessive signals from the computer. It is possible that the lead is not earthing the signal properly.*

Open up the Scart socket and make sure the earth is connected to pins 5, 9, 13 and 18. All these are marked chassis so they should be at the same potential. It is also good practice to make sure they are all connected to the earth of your computer.

However, it looks like you are having problems with the newer A3010 computer. You can try, in addition to the series resistor, another resistor from the TV end of the signal to earth of about 82ohms. The combination of high brightness and low contrast does suggest to me that there is a DC voltage on the video output of your computer.

Your best best is to look at the signals on an oscilloscope to confirm this. If this proves to be the case you could try inserting a diode in series with the 300ohm resistor. This would take 0.7v DC off the signal.

If you did this you would still need the resistor to earth. This is probably the cause of your bad sync locking as if the signal is not going down to zero it won't switch the TV correctly.

You need the same arrangement here but without the 300ohm series resistor. If this fails you could try blocking the DC with series capacitors and a clamping diode but this might degrade the quality of the picture.

You can write to Mike Cook c/o Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.

He will answer any questions about difficulties you may be having with your machines, mainly those to do with hardware. If you want a personal reply ensure that you enclose an SAE with your letter.

Magnetic attraction

Q I HAVE a problem with my Acorn stereo monitor. When I use a mostly white screen you can see a pink tinge towards the right of the screen.

My Bush colour television has a Degauss button on the back but my monitor doesn't. Is there any way of degaussing my monitor? – **Andrew Holland, Birmingham**

A *Most TV sets have automatic degaussing coils fitted. This removes small magnetic fields that deviate the electron beams and cause them to hit the wrong phosphors.*

It is quite simple to make your own degaussing system. All you need is a coil with as many turns on it as you can manage. It's best if it has an air core rather than a magnetic one.

Now feed this coil with an AC signal from a mains transformer. You have to make sure that either the coil has enough turns or the transformer can supply the required current.

Now move the coil in slow circles around the affected area of the screen and slowly move it away from the screen and that's it.

If the problem still persists you need a stronger field or there is a permanent magnet somewhere close like a loud speaker sitting on top of the monitor. If you don't want to make your own coil most TV repair shops should be able to do the job for you.

Bad connections

Q MY A420/1 has been upgraded to 4Mb and I have recently added RISC OS 3.1. Since this I have been experiencing an intermittent problem. When I switch the machine on the startup banner fails to appear and instead I get the message:

Error: InstructionAbort: Abort on Instruction Fetch at %&0 (Error number &80000001

The * prompt appears but the only command which functions is *FX 0 which gives the response *RISC OS 3.10 Acorn Computers Ltd (Error number &F7).* This can only be remedied by switching off the machine for a minute or so and starting again.

Occasionally, the first error reads: *Error: AddressException: Address Exception at &%0 (Error number &80000003*

But the FX 0 response remains the same. I have also got this error when pressing Control + Break from certain games.

I have installed two podules of which one has failed to initialise after getting the above error. Can you suggest an answer? – **Chris James, Ticknall, Derby**

A *This sound like a problem with the operating system software. As it is intermittent I can only think that during installation of the roms one of the IC pins got bent under and is only touching the top of the socket. See if pressing on the roms while resetting the computer cures the problem. If so, remove that IC and replace it with the pin straightened.*

BBC Micro disk power

Q I HAVE acquired an unpowered 3.5in drive and despite your strictures over the years against running multiple disk drives off the Model B's internal power supply, I tried paralleling it up with my 5.25in drive – a genuine BBC 40 track SS 100k job also unpowered. Both work a treat with no sign of power bumps so I assume that the 3.5in drives has a relatively low current drain.

My question concerns my A3000. I recall reading that trying to operate a 5.25in drive off an A3000 would cause actual damage but that a second unpowered 3.5in drive could simply be paralleled up with the internal drive.

However, my recollection is unclear and I can't locate the letter or article to refresh my memory. If there is a danger of actual damage then obviously I will not. So, can I or can I not parallel a second unpowered 3.5in floppy disk drive up with the A3000's internal unit without danger of physical damage? – **M.E. Poole, Paraparaumu Beach, New Zealand**

A *The smaller drives are much lower in power consumption that the larger ones this is why you got away with running both from your Model B. You will damage the signal buffers if you try to connect a larger drive directly to the 32-bit computers.*

If you want to do this there are plenty of third party buffer boards cheaply available – from Watford Electronics, for instance. As far as I know there is sufficient signal and power available from an A3000 to run a second drive but only if there are no other expansion or hard drives taking power.

If there is you'll need to work out the power requirements more carefully. It is a simple matter to parallel up two drives with the appropriate lead and my A310 has two drive internally powered.

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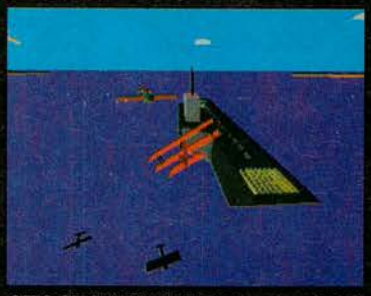

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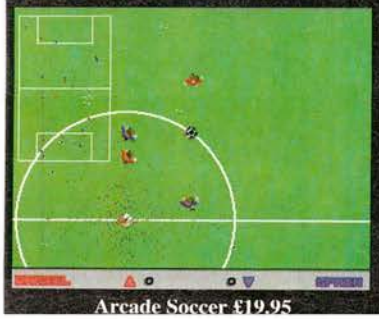

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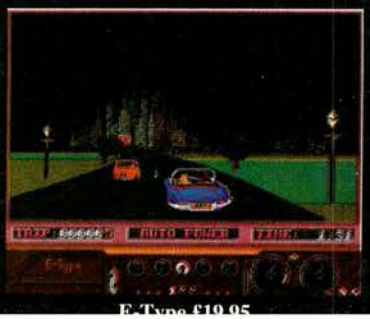

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Steve Turnbull previews a new project planning package

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PROJECT planning is one of those areas that receives very little attention yet if handled correctly can help make tasks easier to accomplish – or, at the very least, make it clearer what's needed to reach the conclusion.

This new package published by PRES isn't really new as such, it's been in use by Acorn themselves as a front-end to a PC program since 1988 but has been completely re-vamped to be fully multitasking by John Skingley, author of the Impact databases.

The version we looked at wasn't completely stable and lacked documentation. However, we were able to get a good picture of its operation. One of the most crucial parts of planning a project is working out before hand all the parts that will be needed to make up the final product or products and that's where something like this comes into its own.

Single document editor

The program loads up in the usual way and is a single document editor, so you can only work on one plan at a time, which isn't a problem. When you create a new project you get a simple empty overview of a particular page size – this can be altered at any time.

To create a project you really need to start at the end – the result, or results – and work backwards deciding what things have to be accomplished to achieve that result, then what resources are required to do those earlier steps and how long each takes and so on until you get to the start.

You cannot edit the overview of the layout, instead you get a new sub-view whenever you click on the main sheet. This is at a fixed zoom size but you can have any number of them – as a test I started generating them and stopped when I got to about 80.

Once you've started a new sheet you need to set up a large number of options: The overall project setup let's you enter its name, description, which calendar to use as a default, page size and a number of other items related to analysing how the project is going.

Finally there are the resources. Although these are in the setup it's quite likely you'll add to these as you go along. A resource is anything you use to produce the end result, whether it's equipment, materials or people. They are given a code, a description and a cost if appropriate – you can specify how much a project costs in terms of a worker's time, for example.

Calendars

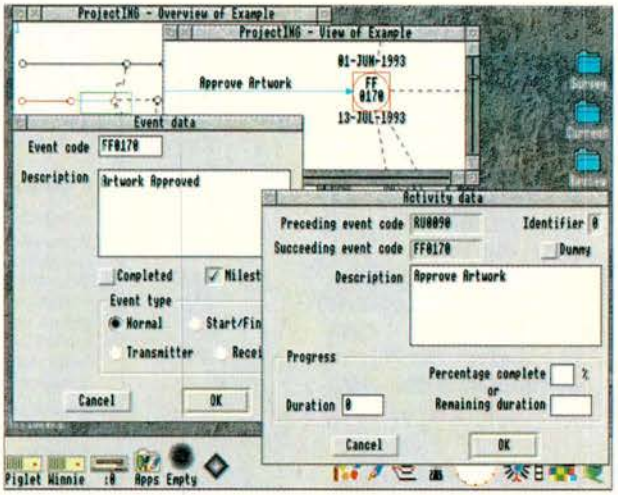
Calendars specify working days and holidays. So on a small-scale operation you could have a calendar for each individual showing when his holidays are.

These non-working days are computed with the time taken to do a task to calculate when it should be completed.

On a big job you can still specify bank holidays and so forth – which could be different for the country where the task is being done. For example, there's no August Bank Holiday in Scotland.

The project is built from Events which are way-points in the process of completing a project – some can be specified as *milestones* which are used when creating a specific type of report.

Events are linked by Activities which usually lead up to the appropriate Event and will have a duration associated with them. An event can have more than one activity leading to it and in addition you can create dummy activities which are used to connect events where some completed sub-product joins a different line of development.



As the project develops you can specify the degree of completeness of an activity, either in the number of time units passed or as a percentage. The line on the worksheet thickens up as do those on the Events.

The system is intelligent and if you mark an event as complete, all the activities and events that it depends on are automatically marked as complete too.

There are an enormous number of textual reports you can choose from such as lists of resources and allocations, critical path analysis and so forth. The worksheet itself can be output to printer or plotter.

Summing up

There is no question that this is a very effective piece of software and it works – which is the main criterion of course. The user interface really could do with re-vamping to conform more to Acorn's guidelines but considering the heritage of the program it's hardly surprising it's a bit unusual.

If you want project planning the quirky nature of the program shouldn't put you off, as it's a lot easier to use than systems on other machines.

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Scan256 gives you up to 256 levels of grey at a maximum of 400dpi and is supported by state-of-the-art sophisticated software – **for only £159.** This makes it the only sensible scanning and image processing solution for the Acorn 32-bit range. Just compare these features:

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- Saves images in industry standard formats: TIFF, Sprite and AIM.
- True brightness, contrast and gamma correction.
- Multiple options – scale to page, centre sideways selected area.
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- Supports proposed ANSI ATA (IDE) specification
- Fast 16 bit MEMC interface interrupt driven to support background disc operations
- 5 Mbytes per second peak transfer rate
- Up to two drives (master and slave) per card
- Multiple cards per machine (up to four)

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- All software supplied in ROM
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- Desktop filer with drive ready detection and disc name under icon
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- Drives can be individually write protected
- Power saving standby modes supported with configurable timeout
- Drives can be used without translation in native mode for minimum overhead
- !IDEFSDisk, creates PC emulator hard discs
- Password protection available

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Part No.	Capacity	Access Speed	Price
ADA 0520	44Mb	28mS	**£159**
ADA 0550	80Mb	17mS	**£195**
ADA 0530	105Mb	16mS	**£235**
ADA 0570	210Mb	15mS	**£359**
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All above 3.5" Drives are supplied complete with Controller Card & cable for use with A300/A400/A500 series machines.

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A5000 Internal IDE Drive

Can be used as 2nd Internal IDE Drive

ADA 1030	80Mb	17mS	**£149**
ADA 0940	105Mb	16mS	**£189**
ADA 0950	210Mb	15mS	**£259**
ADA 0580	330Mb	15mS	**£399**

A3000 External IDE Drives

ADA 0780	44Mb	28mS	**£225**
ADA 1020	80Mb	17mS	**£265**
ADA 1050	105Mb	15mS	**£309**
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State of the art, 4 layer internal IDE Hard Cards for the A3000. Software supplied in, On-board ROM.

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Acorn Multimedia

- Multimedia Expansion **£485**
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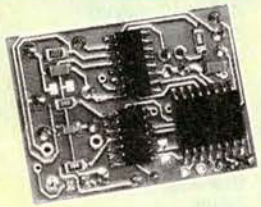
VIDC Enhancer



Our two unique VIDC add-on boards for the Archimedes cater for all VGA and Multiscan monitors and screen modes. The multimode software supplied, provides all the new modes for the selected monitor type, including the now standard Computer Concepts modes. With VGA monitor, you are no longer restricted to a few modes. A Desk Top application supplied on disc, allows new modes to be designed and existing modes to be modified for particular monitors.

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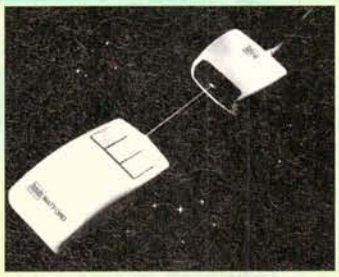

Features
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- Power - by two AAA size batteries (not included)
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Price £26

Archi A4 Scanner

The 216mm scanning width can cope with both desktop scanning of single sheets, photographs, diagrams, etc., with its fast ten page automatic document feeder, but it can also detach from the feeder to become a convenient hand-held full page scanner for larger documents or pictures.
Scanned image control can be freely adjusted in increments of 10 dots per inch from 100 up to 400 dpi resolution with 64 levels of grey scaling. A built in shading controller and manual brightness control achieve optimum image clarity.
Unlike some scanners, which use a red light source, the Watford scanner uses a yellow/green source which vastly improves the light/dark contrast, thus eliminating the effect where any red-based colours are faded down to white and so do not show up in the scanned image.

Archi A4 Scanner	£199
Sheet Feeder for above	£75
Scanner + Sheet Feeder	£269

Spares for Archimedes

Archi Keyboard	£29	Cased Keyboard	£120
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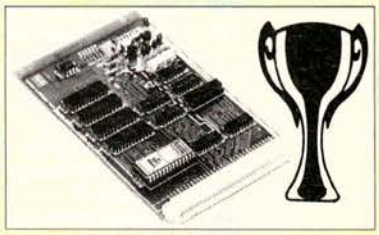
Archi Real-Time Digitiser



Now supplied with NEW RISC OS Version Software

Watfords' Archimedes Video Digitiser is the most sophisticated digitiser ever designed for a micro. It provides a fast and flexible means of capturing images from a video camera or recorder for display and manipulation on the Archimedes range of Micros. Off-air televison signals may also be digitised via a video recorder or TV tuner. Please write for further details.

Price £75

A Set of Colour Filters for colour image grabbing using a video camera **£16**

Archi to BBC Serial Link Mk 2

Using this simple data link, it is possible to solve all your BBC to Archimedes data transfer problems. The kit is supplied with a disk, and the necessary cable to connect the two computers.

- Risc OS 2 Version **£15**
- Risc OS 3 Version **£16**

(P.S. For A3000 Serial Upgrade **(£19)** required)

A3000 Accessories

3.5" External Drive	£95	Monitor Stand	£15
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A3000 I/O Card (User, Analogue & IIC)

This NEW versatile I/O Card from Watford, fits inside the A3000 and includes an Analog to Digital Converter, a User Port, and an InterIC (IIC) connector.

The card allows many of the peripherals developed for the BBC to be used with the Archimedes A3000. The ADC and User Port have the same pin out and connectors as the BBC computers.

Extensive RISC OS software is supplied to provide BBC OSBYTE calls for support of the ADC and User Ports, including the BASIC keyword ADVAL. The software provides extended RISC OS support for separate interrupts from both the ADC and User Ports, permitting easy interrupt driven operation.

The card is provided with all the software in ROM and is automatically loaded when the machine is turned on.

Peripherals connected to the ports can obtain up to 500mA of power at +5V. A fuse is fitted to the card to protect the A3000 from damage arising from accidental short circuit of the power output.

Features
- An 8 bit User Port with a standard 20 way IDC connector, compatible with the User Port on the BBC computers and the Archimedes I/O Podule.
- A 10 bit Analog to Digital Converter with a standard 15 way D type connector, compatible with the ADC on the BBC range of computers and the Archimedes I/O podule.
- An InterIC (IIC) Port with a 5 pin DIN socket to connect the A3000 to external IIC devices. **£38**

Cortian CKAI Interface

Eliminates need to have a User port in A3000/305/310/400/540 when using Concept Keyboard. **£28**

Concept Keyboards

A4 Standard Pack	£89	Primary Pack	£95
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Now everyone can afford an Archimedes Micro, monitor, printer, Hard Drives etc., with Watford Electronics 12, 24 & 36 months credit facility.

Please telephone 0582 74 55 55 for details.

Archimedes External Disc Drive Interface

With this interface it is possible to connect almost any 5.25"/3.5" disc drive with its own power supply to the Archimedes. Upto 4 disc drives can be connected. Fully Buffered Board. NO SOLDERING is involved. Supplied complete with necessary lead.

Price £21

Back Plate Extension

- A300/400 **£15;**
- A3000 **£14**

ARM 3 Turbo Card MkII

Simply The Best

Here it is at last – the all new Mark 2 version of Watford's highly acclaimed ARM 3 processor board for the Archimedes and now also the A3000 series computers. Using the latest surface mount technology on a high quality four layer circuit board we have reduced the overall size to a mere 53mm x 45mm, and the cost to only £145. Mk II upgrade will increase the speed of your micro by a factor of 3 to 6.
Any competent A300 or A400/1 series micro owner can fit the upgrade himself, as we provide full fitting instructions and a special ARM chip extraction tool. However for A3000 micros and those not wishing to perform the upgrade themselves, we will collect, upgrade and return your micro by courier service, at an additional cost of £24.
(A300 and old A440 series owners please note – you will need to upgrade to MEMC1A for ARM3 to work.)

RRP £249

Special Offer £119

Network Accessories/Software

BBC B Econet Kit	£42
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Archimedes Ethernet Card	£139
A3020/4000 Ethernet Card	£179
AUN/Level 4 Fileserver	£379
Econet Starter Kit	£137
100m Econet Cable	£99
Econet Socket Box	£7.50

(P.S. Full range of Network Accessories/Software/ Site Licences available. Telephone for details.)

Leasing finance at very attractive rates now available to Businesses (subject to status), Schools, Colleges, Universities, Government Depts. and Local Councils.

Continued→ → → → → → → → →

Archi Mk II Hand Scanner

Watford's Mk II hand scanner has a maximum resolution of 400 dpi. The scanning width is 4". The sophisticated software is supplied in a 64K ROM, located on a standard single width expansion podule. As you scan a page, the image appears in the scanning window on the screen, scrolling up in real time. Other facilities include Cropping and scaling to any size including stretching and squashing in X and Y directions separately. Colour tinting. X and Y flip. Edge detection which turns solid objects into outlines. Images can be printed on any printer supported by RISC OS.
On-screen help is provided via the RiscOS interactive help facility. (Please write in for full technical details).

AHS-4 Archi 300/400 Version £89
AHS-3 Archi A3000 Version £99

Quest – Tracer ball

An attractively finished, extremely reliable, mouse replacement, input device. Requires very little desk space. Connects directly to your BBC B, BBC Master or Archimedes Micro.

QT-10 BBC/Master Version £25
QT-20 Archimedes Version £26

Antistatic Lockable Disc Storage Units

- **M35** – holds up to 50 5.25" discs £4.95
- **M85** – holds up to 95 5.25" discs £6.95
- **M25*** – holds up to 25 3.5" discs £4.95
- **M50** – holds 50 3.5" discs £6.50
- **M100** – holds 100 3.5" discs £6.99

* Not lockable

Disc Plonker Rack

When using ones micro, there is a tendency to have more than one Disc on the desk. This exposes them to the hazards of fingerprints, scratches, dust, coffee and an untidy desk.
Why not protect your valuable data from all these hazards with the help of our extremely handy and low cost DISC PLONKER RACK. Holds up to eight 5.25" discs. £2

3M – Diskettes

Lifetime warranty on 3M Discs

- *10 x 5.25" S/S D/D 40T (744)* £5
- *10 x 5.25" D/S D/D 40T (745)* £5
- *10 x 5.25" S/S D/D 80 Track (746)* £6
- *10 x 5.25" D/S D/D 80 Track (747)* £7
- *10 x 5.25" 1.6M D/S H/D for IBM* £8
- *10 x 3.5" S/S D/D 40/80 Track* £6
- *10 x 3.5" D/S D/D 40/80 Track* £6
- *10 x 3.5" D/S H/Density* £10

Top Quality Diskettes

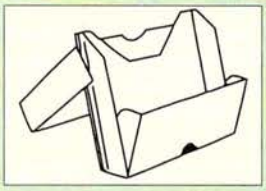
Watford's life time guaranteed disc are supplied complete with self stick labels & plastic library case.

- *10 x **M3** 3.5" D/S D/D 80 Track* £6
- *10 x **M9** 3.5" D/S High Density* £10
- *10 x **M4** 5.25" S/S D/D 40 Track* £5
- *10 x **M5** 5.25" D/S D/D 40 Track* £5
- *10 x **M7** 5.25" D/S D/D 80 Track* £6
- *10 x **M8** 5.25" D/S H/D Hi-Density* £9

Disc Drives in Monitor Stand

- **CDPM 800S** – Twin 5.25", 800K Double sided 40-80 track switchable disc drives mounted in an attractively finished Beige colour plinth for the BBC B & Master 128K micros. Supplied complete with integral power supply, cables and Utilities disc. The mains switch with neon On/Off light indicator, and the two 40/80 track switches are mounted on the front panel for ease of use. **£139**
- **DP35 800** – Same as above except, one disc drive is a 5.25" and the other is 3.5". **£135**

Plastic Library Cases



DLC1 – Holds 5 x 3.5" Discs. £1.50
DLC2 – Holds 10 x 3.5" Discs. £1.90
DLC3 – Holds 5 x 5.25" Discs. £1.60
DLC4 – Holds 10 x 5.25" Discs. £2.00

Disc Albums

Attractively finished in leather-look PVC Vinyl

DW1 – Holds 6 x 3.5" Discs £2.50
DW2 – Holds 6 x 5.25" Discs £3.00
DW3 – Holds 20 x 5.25" Discs £3.50
DW4 – Holds 40 x 3.5" Discs or 5.25" Discs £4.50

Cleaning Kits & Aerosols

- 5.25" Disc Cleaning Kit £4
- 3.5" Disc Cleaning Kit £4
- PC Cleaning Kit £7
- Professional PC Cleaning Kit £12
- Aerosol Dust Spray Can £3
- Servisol Foam Cleaner Can £3
- Antistatic Aerosol Spray £3

Watford's MkII 1772

Single/Double Density DFS

Many of our customers have wanted to use our superior DDFS and Acorn ADFS together. Now our Mk II DDFS Board with its 1772 Disc Controller, has been adapted to allow the use of Acorn ADFS as well. It also has all the commands of the Acorn's 1772 DFS, plus many more added features.

- Complete Kit Special Price £39
- DDFS Manual (No VAT) £6.95

Assorted ROMS BBC B/Master

ACORN ADFS	£25		
ACORN BASIC 2 plus User Guide	£22		
ACORN DNFS	£17		
Acorn OS B+	£25		
Acorn OS 1.2	£14		
Beebmon	£22		
Dump Out 3	£25		
Graphics Extension Rom			
GXR-B	£21		
GXR-B+	£22		
Logotron LOGO	£43		
MASTER OS ROM	£38		
Master ULA (47)	£15		
Master ULA (60)	£10		
Numerator – Archi	£69		
Numerator – BBC	£39		
Pendown ROM	£32		
SERIAL ULA	£13		
TED	£15		
Video ULA	£14		
1Mb OS ROM	£39		
View 3.0	£45	Viewsheet	£36
Viewstore	£36	Viewspell 80T	£25
InterBase	£49	InterChart	£25
InterSheet	£37	InterWord	£36
Mega-3 ROM	£76	Spell Master	£42
Wordwise Plus			£38#
# Price includes a FREE Wordaid Rom			
View Printer Driver ROM	£29		
Word-Aid	£24		

BBC Micro Products

Quest Mouse III & Quest Paint	£39
Quest Mouse III, Quest Paint, AMX StopPress & Pagefont	£59
Quest Mouse III Only	£25
Quest Paint Only	£23
Quest Font Disc (22 fonts)	£15
Red Mouse Mat	£3
Green Mouse Mat	£3
Blue Mouse Mat	£3
Conquest-Quest Extensions	£24
Quest Colour Dump Disc for Integrex 132	£18
AMX Mouse & Superart	£39
AMX Mouse Only	£25
AMX Superart	£25
AMX Stop Press DTP	£18
Page Fonts (20 fonts)	£13
Wapping Editor DTP	£39
Wapping Editor & Quest Mouse	£59
Wapping Art Disc (Clip Art)	£15
Wapping Font Disc 1	£12
Wapping Font Disc 2	£13
32K Shadow Ram Extension Card 32K Memory Expansion for the BBC Micro	£45
BBC Master Twin Rom Cartridge	£9
BBC Master Quad Rom Cartridge	£14
32K ROM/RAM Card for BBC'B	£39
64K ROM/RAM Card for BBC'B	£52
128K ROM/RAM Card for BBC'B	£83
16K Static Ram for ROM/RAM	£8
16K Dynamic Ram for ROM/RAM	£13
Battery Backup for ROM/RAM	£3
Sideways ZIF External ROM Socket	£18
Solderless Rom Board	£32
Solderless Rom Board Utility Disc	£8
Data Duck – Plug 2 Disc drives into BBC	£14
Power Duck – Power 2 drives from BBC	£8

Acorn & Watford DFSs

- Watford DFS Kit complete £42.00
- DFS Manual (comprehensive) £6.95
- Acorn DNFS ROM £17.00
- Acorn ADFS ROM only £25.00
- Acorn 1772 DFS ROM Kit £42.00
- Acorn DFS Kit complete £42.00

TEX EPROM ERASERS

TEX Eraser operates following the manufacturer's specifications, to give maximum possible working life to EPROMs by not erasing too fast. Erases up to 10 EPROMs. Has an automatic safety cut-off to switch off UV lamp when opened. £36

- Spare UV Lamp £12

Acorn Speech Synthesizer package complete, for the BBC B Microcomputer
Special Offer £6

Microvitec Monitors

- **1451** – Medium Resolution #£199
- **Cub3000** Medium Res for A3000 #£195
- **CubScan 1440** – 14" £389
- **CubScan 1450** – 15" FST £POA
- Dust Cover for Microvitecs £5.50
- **Touchtec 501 Touch Screen** £239
- **Touchtec 3000** (For RiscOs 2 only) £POA

3 years parts & labour warranty

Multiscan Monitors

Eizo T240i	£483	Pan TX1713MAB	£616
Eizo F340i-W	£625	Phil 4CM4270	£289
Eizo F550i-W	£899	Phil 7CM3279	£249
NEC 2A-N	£274	Phil 7CM5279	£269
NEC 3FG	£360	Taxan 787	£229
NEC 3FGe	£449	Taxan 787LR	£239
NEC 4FGe	£479	Taxan 789LR	£289
NEC 5FG	£899	Taxan 795-PC	£465
NEC 5FGe	£789	Taxan 875+ LR	£737
Panasonic C1381	£199		

Panasonic monitors carry 2 years on-site maintenance warranty

Aries AlphaScan Monitor

Its multiscan circuitry provides automatic adjustment for frequencies between 31 and 56KHz horizontal, and 43 and 70Hz vertical. Its 0.28mm dot pitch high resolution tube provides super sharp text graphics, while a high speed (70/72Hz) refresh rate provides a flicker-free display easing the eye strain. The VIDC Adaptor supplied with the monitor allows high resolution operation in all screen modes. £299

- Aries Alphascan 17 Plus – 17" £585
- Aries 6000 – 15" Flat Screen, 0.28mm non-glare 1024 x 768 non-interlaced (70Hz) Microprocessor controlled £395
- Aries 7000 – 17" Flat Screen, 0.28mm non-glare. Maximum resolution 1280 x 1024 non-interlaced. Microprocessor controlled £625

Philips Monitors

- **BM7502** 12" Hi-res Green £88
- **CM8833ii** 14" med. Res Colour. Ideal for BBC B; Master & Archimedes £192
- Dust Cover for Philips Monitors £6
- Spare Monitor Leads (various) £7

Credit Card Hotline
0582 745555

Continued→ → → → → →

Pace External Modems

All Pace modems are BABT Approved and include a 5-Year Parts & Labour Warranty

Linnet Plus – Intelligent, V21/23 Auto Dial/Answer, Hayes Compatible **£89**

Linnet 24 – Intelligent, V21/V23, V22, V22bis, Auto Dial/Answer, Hayes Compatible **£135**

Linnet Quad – Intelligent, V21/23, V22, V22bis, V42, MNP 4&5, Auto, Dial/Answer, Hayes Compatible **£159**

Linnet 32 – V32, V22bis, V42bis, V42, MNP 4&5 **£239**

Linnet 32+ – V32bis, V32, V22bis, V22, V23, V21, V42bis, V42, MNP 4&5 **£285**

Ultralink Quad – V22bis, V22, V21, V23, V42bis, V42, MNP 4&5, Upgradable to Ultralink 32 Plus Spec. **£195**

Ultralink 32+ – Intelligent, V32bis, V32, V22bis, V22, V21, V23, V42, MNP 4&5, 2&4 wire leased line with P.S.T.N., dial backup and auto restore **£389**

Archi Comm. Software

- Hearsay 2 **£68**
- ArcComm 2 **£45**
- RS-232 Cable for above modems **£9**

Printer Leads

- BBC Centronics 4' **£5;** 6' **£6**
- Archi Parallel 2m **£5;** 5m **£9;** 10m **£13**
- PC Parallel 2m **£5;** 5m **£9;** 10m **£13**
- 25 pin D Male/Male 2m **£5;** 5m **£10**
- Centronics Double Ended 4' **£5;** 6' **£6** 5m **£10;** 10m **£14**
- RS232 Leads Various **£POA**

Integrex Ink Jet Printers

- Paper Roll for Integrex 132 **£6.50**
- BBC Screen Dump Software **£10**
- Colour Cartridge **£23**
- Black Cartridge **£14**
- 100 A4 OHP transparencies **£55**
- Colour Jet 2000 **£599**
- Betajet Ink Jet Printer **£185**
- Betajet Cut Sheet Feeder **£43**
- Integrex Colourjet Series 2 **£335**
- Auto Sheet Feeder for Series 2 **£45**

Star Printers

	Printer	CSF	Ribbon
LC15	£186	£135	£5
LC20	£102	£60	£4
LC100C	£117	£65	£9
LC24-15	£245	£135	£5
LC24-100	£140	£69	£5
LC24-20 Mk2	£175	£65	£5
LC24-200C	£205	£65	£12
LC200 C	£151	£65	£12
Star Jet SJ48	£169	£43	£16
SJ144C	£434	–	–
XB24-200C	£324#	£80	£12
XB24-250C	£389#	£139	£12
ZA-200C	£260#	£89	£12
ZA-250C	£324#	£139	£12

Includes 12 months on-site warranty

- Black Ribbons for Colour Printers **£5**
- Serial 8K I'face LC10/15/24/200 **£52**
- 32K Buffer LC/XB24-10; 15; 200 **£52**
- Star/Archi Colour Printer Driver **£15**

NEC Printers

	Printer	CSF	Ribbon
P22Q	£181	£59	£6
P32	£235	£59	£6
P62	£339	£79	£8
P72	£395	£115	£8
P90	£577	£115	£8

- Jetmate J400 **£169;** ● Jetmate J800 **£249**

- Black Ribbons P20; P32 **£6**
- Ribbons P60/70/P90 Black **£8;** Colr **£14**
- P60/70 Colour Option Kit **£59**
- CSF for P20 **£59;** P60 **£89;** P70 **£89**

Laser Printers

All Laser printers (excluding HP Lasers) include 12 Months On-Site maintenance

Brother HL4-PS Postscript	4ppm	£965
Brother HL6 – NEW –	6ppm	£427
Brother HL10-PS	10ppm	£1265
Brother HL10-DV	10ppm	£1016
Brother HL10-DPS	10ppm	£1435
Canon LBP4 LITE	4ppm	£478
Canon LBP4+ 1.5M RAM	4ppm	£639
Canon LBP-8 Plus IIIR	8ppm	£1420
Canon LBP-8 IV 600DPI	8ppm	£932
Epson EPL-4300	4ppm	£520
Epson EPL-5000	6ppm	£439
Epson EPL-5200 – NEW –	6ppm	£525
Epson EPL-7500 PS	6ppm	£1135
Fujitsu VM600	6ppm	£539
HP Laserjet 4 ML	4ppm	£757
HP Laserjet 4	8ppm	£1048
HP Laserjet 4L – NEW –	4ppm	£459
HP Laserjet 4M PS	8ppm	£1369
HP Laserjet 4si	16ppm	£2199
HP Laserjet 4Si MX 1200 DPI	16ppm	£3325
NEC Silentwriter S62P PS#	6ppm	£989
NEC Silentwriter S102	6ppm	£893
NEC Silentwriter2 290	8ppm	£1125
NEC Silentwriter 290P PS	8ppm	£1449
OKI OL400E	4ppm	£399
OKI OL410		£589
Panasonic KX-P4410	5ppm*	£445
Panasonic KX-P4430	5ppm*	£579
Panasonic KX-P4451 DB	11ppm*	£839
Panasonic KX-P4455 PS	11ppm*	£1249
Star LP-4 Post Script	4ppm	£759
Star LS-5	5ppm	£449
Star LS-5 EX (RISC Based)	5ppm	£548
Star LS-5 TT True Type+Mac	5ppm	£739
Star LP-8 III postscript	8ppm	£1125

*2 years on-site warranty

FREE Logitech Scanman 32 scanner & Microsoft Publisher

- HP Laserjet 4L 3 years on-site **£100**
- HP Laserjet 4si 3 years on-site **£505**
- HP Laserjet 4/4M 3 years on-site **£170**

Laser Toners

Canon 2, 3 & 4	£52	KXP4450/50i/55	£19
Canon LBP8-IV	£75	KX-P4420/30	£25
Canon 8/Star LP8	£59	NEC SWriter	£84
Epson GQ	£12	HPII/D, III/D	£58
EPL 40/41/4300	£55	HP IIP, IIIP	£48
EPL 71/7500	£117	HP4/4M	£72
EPL 8100	£117	HP Laserjet 4L	£55
EPL5000/VM600	£89	OKI OL400/800	£18
Qume Crystal(3)	£84	OKI OL400e	£17
Star LP4	£52	VM800 8K pages	£109
Star LS5	£69		

Laser RAM Upgrades

Type	1M	2M	4M	
IIP; IIIP	£49	£80	£132	
II & IID	£60	£96.	£142	
LJ4/4M	£69	£75	£159	8M/£279
EPL4100	–	£120	–	512K/£52
KX4420/50i	£59	£89	£149	
NEC S62/S102	£99	£180	–	
Star LBP	£139	£275	–	
Laserjet 4L	£75	–	–	

Jetpage Postscript Cartridge

- HP IIP/IIIP **£225** ● IID & III **£227**

Various Add-Ons

- Laserjet Appletalk Interface **£135**
- HP Adobe Postscript+ Cartridge **£359**
- Pacific Page Postscript **£259**
- HP Premier Font Collection **£28**
- Laserjet Various Font C'tridges **from £45**
- HP Postscript Module for LJ4 **£270**
- Laserjet 4 Powered envelope feeder **£199**
- Jetdirect Ethernet Card for Laserjet IIIsi/4/4Si **£359**
- 500 Sheet paper cassette (3rd Bin) **£205**
- HPIIP/IIIP Lower Cassette Tray **£115**
- Canon LBP-4 Lower Cassette Tray **£96**
- Ozone Filter P4420 **£9;** P4450/55 **£20**

Panasonic Printers

	Printer	CSF	Ribbon
KX-P1123	£124	£49	£7
KX-P1170	£98	£59	£6
KX-P1624	£264	£126	£8
KX-P1695	£267	£126	£6
KX-P2123M	£144	£69	£7
KX-P2124	£215	£89	£7
KX-P2180M	£126	£69	£7
KX-P2624	£272#	£126	£8
KX-P2023	£158	£155	£8

FREE – Printer lead with every Panasonic printer listed above

Includes 12 months on-site warranty

- Dustcover for 80 column printers **£6**
- Serial Interface for above Printers **£46**
- Black Ribbons for P1081, 1180, 1124 **£7**
- Brown, Blue or Red Ribbons for KX-P1081/1592/1595/1695 **£9 each**
- 32K Buffer for above Printers **£16**

Colour Kit for KX-P2180; KX-P2123 and KX-P2124 **£37**

Citizen Printers

120D+	£94	Swift 200	£178
PN-48	£179	Swift 240	£200
Swift 90	£132	Swift 240C	£212
Swift 90C	£198		

2 years parts and labour warranty on all above Citizen Printers.

- Swift 24 Ribbons: Black **£4** Colour **£13**
- Cut Sheet Feeder for 80 col. printers **£75**
- Citizen 120D Ribbons **£3.50**
- Archi Colour Printer Driver **£15**

Hewlett-Packard Printers

DJ500 colour	£239	DJ Portable	£185
Desk Jet 510	£199	Quiet Jet plus	£299
DJ 550 Colour	£399	Desk Jet 1200C	£1040

+ Includes 12 months on-site warranty

3 years on-site maintenance available as follows:

DeskJet & DeskWriter mono	£55
DeskJet & DeskWriter colour	£65

- Paintjet Cartridge Black **£17;** Colour **£27**
- DJ Portable CSF **£49;** Carrying Case **£49**

Hi-quality InkJet Paper A4 90gsm 500 sheets £9

Desk Jet 500 Accessories

- Ink Cartridges Black **£16;** Colour **£23**
- High Capacity Ink Cartridges Black **£25**
- **Ink Refill Double Pack (JetFill) £10**
- **Ink Refill High Capacity (JetFill) £16**
- **Deskjet Turbo Driver £45 (only £39 when purchased with printer)**
- Archi – DJ550 Colour Printer Driver **£14**
- Epson FX Emulation Cart.(500 mono) **£45**
- IBM Proprinter Emulation Cartridge **£59**
- Wordperfect Cartridge **£89**
- DJ 500 Dust Covers **£6**
- 636G 50 x Transparencies A4 **£40**
- 636J 50 x Glossy Paper A4 (also XL) **£40**
- 630Z 50 x Cut Sheet Paper A4 **£15**

Plug In Font Cartridges for DJ 500

22706B - Prestige, Elite, Line Draw **£55**
22706C - Letter Gothic & HP Line Draw **£56**
22707P - Proprint Emulation Cartridges **£57**

HP Paintjet/XL Accessories

- 630P 200 Z-Fold paper 8.5 x 11 **£14**
- 630Q 50 Transparencies 8.5 x 11 **£39**
- 630S 50 Transparencies A4 **£40**
- 630Y 200 Cut Sheets 8.5 x 11 **£14**
- 631Y 200 Cut Sheets A4 **£18**

Epson Printers

	Printer	CSF	Ribbon
FX870	£265	£47	£4
FX1170	£335	£69	£6
LQ100	£122	£–	£4
LQ570+	£204	£39	£4
LQ870	£359	£39	£6
LQ1060	£585	£155	£6
LQ1070	£310	£69	£6
LQ1170	£445	£69	£6
LQ2550	£669	£360	£6
LX100	£115	£–	£4
LX400	£92	£69	£4
LX850+	£135	£69	£4
LX1050	£204	£125	£6
SQ870	£419	£170	£23
SQ1170	£560	£155	£23
SQ2550	£669	£–	£23
Stylus 800	£199	£–	£10
Stylus 1000	£355	£–	£10

Epson RS232 Interface

Standard **£28;** +8K Buffer **£75**

- LQ100 Tractor Feed **£29**
- FX850/LQ800/850 Tractor Feed **£69**
- FX/LQ1050 Tractor Feed **£85**
- LQ2500/2550 Tractor Feed **£90**
- Dustcovers for 80 col printers **£6**
- Stylus 800 Transparencies (50) **£35**

Canon Bubblejet Printers

	Printer	CSF	2nd Bin	Ink Cart
BJ10SX	£165	£43	–	£16
BJ200	£244	–	–	£16
BJ230	£280	–	–	£16
BJ300*	£305	£88	£88	£12
BJ330*	£369	£92	£79	£12
BJC800C	£1219	–	–	£16

- **BJ10E/10EX/10SX/200/230 Jumbo Ink Refill pack (Jetfill Twin Pack) £12**
- Optional Battery pack for BJ10EX/SX **£33**

* includes 12 months on site warranty

Fujitsu Printers

B100 Inkjet	£159
B200 Inkjet	£215
Ink Cartridge for B100/200	£14
Ink Refill for B100/200	£10

Professional Printer Stand

The professional printer stand takes hardly more space than your printer. Due to the positioning of the paper feed and re-fold compartments ie. one above the other, the desk space required for your printer functions is effectively halved. Its ergonomic design ensures smooth paper flow and automatic refolding.

80 Column version £16
132 Column version £25

Perspex Printer Stand

Give your Computer System a touch of Class with our elegant, smoke finished Perspex Printer stand.

80 Column version £14
136 Column version £18

Universal Printer Sharers

Connect up to 4 Micros to 1 printer or 4 Printers to 1 Micro with our combined, Sharer/Changer switch boxes.

Standard Low Cost Sharers

Connects	Serial	Parallel
● 2 to 1	£8	£9
● 3 to 1	£11	£12
● 4 to 1	£15	£16

Professional Sharer Units

Connects	Serial	Parallel
● 2 to 1	£12	£13
● 3 to 1	£15	£17
● 4 to 1	£24	£26

Auto Printer Sharer Switch

Connects	Serial	Centronics
• 2 to 1	£27	£29
• 4 to 1	£44	£45
• 8 to 1	–	£75

256K Multi Spooler

These Parallel Auto printer sharer switches have built-in 256K Buffer.

• 2 In / 2 out **£99** • 4 In / 2 out **£115**
• 8 In / 1 out **£149**

(Cables for all printer switches are from £5 each please specify the type required when ordering.)

Compact Converter Unit

Serial to Parallel & Parallel to Serial **£32**

Listing Paper

- 1,000 Sheets 9.5" x 11" Fanfold **£7**
- 2,000 Sheets 9.5" x 11" Fanfold **£11**
- 1,000 Sheets 9.5" x 11" NCR 2 Part Fanfold **£21**
- 1,000 Sheets 15" x 11" Fanfold **£9**
- 2,000 Sheets 15" x 11" Fanfold **£16**
- 1,000 Sheets true A4 Fanfold Paper 70gms **£11**
- 2,000 Sheets true A4 Fanfold Paper 70gms **£21**
- 500 Sheets A4 80gms Bond **£3.50**
- 500 Sheets A4 90gms Cartridge for Ink Jet/Laser printers **£9**

(All our Fanfold paper is Micro perforated leaving a smooth clean edge when the tractor feed strips are detached).

Cross Over Manual Switch

2 In/2 Out Parallel	£29
2 In/2 Out Serial	£28
3 In/2 Out Serial	£36

Printer Ribbons & Various Dust Covers

Type	Ribbons	Dust Covers
BBC B/BBC Master	–	£6.00
Archimedes Micro pair	–	£9.00
Citizen 120D	£3.25	£6.00
EX800/1000	£6.00	£6.00
RX/FX80/85/800/MX80	£2.95	–
FX/MX/RX100/1000	£3.95	–
Kaga/Taxan KP810/815	£6.00	£6.00
LQ400/500/550/800/850	£5.50	£6.00
LQ1050/LQ2500	£12.00	£6.00
LX400/800/850	£3.50	£6.00
M1009/GLP	£2.95	£6.00
NEC P2200	£4.50	£6.00

Dust covers for most 80 column printers available at £6 each

Printer Labels

(On continuous fanfold backing sheet)

1,000 90 x 36mm (Single Row)	£4.50
1,000 90 x 36mm (Twin Row)	£4.60
1,000 90 x 49mm (Twin Row)	£4.95
1,000 102 x 36mm (Twin Row)	£4.70

Laser Printer Labels on A4 Sheets

3750 – 70 x 29mm (3 Rows x 10)	£15.50
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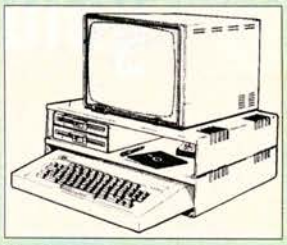

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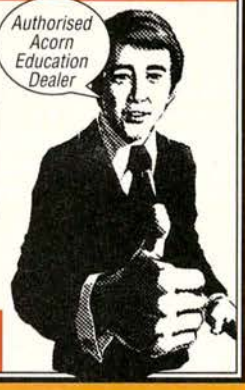

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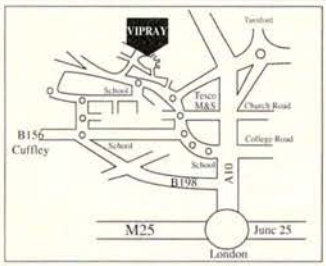

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YOU know how it is. You've just drawn the best picture in your life either in !Draw or !Paint but something still niggles you about it.

Then you realise that however skilful you may be with these packages the resultant image can quite readily resemble something from a *painting by numbers* kit.

This is usually due to lots of areas being filled in with flat colour which makes a drawn object appear to be made from one material – a rather lurid and vibrant-hued plastic usually.

To counter this I have devised a small program to allow you to fill selected areas of a drawing with whatever texture you can think of. The idea is to create a masterpiece either in !Draw or !Paint – no bigger than half the width of the screen – and save it as a sprite with any name to a SpriteFile called *Textures*. !Draw images can be captured off screen using the iconbar menu facility provided by !Paint.

The textures themselves are created as sprites and are simply a square area containing the image of the simulated material. These, too, must be saved in the spritefile *Textures*.

Create each texture in !Paint as a Mode 13 sprite, size 64 by 64 with no mask, calling the first one *texture0*, the second *texture1* and so on. I have created six defaults ranging from pitted granite, through wood grain to gory chequers.

The amount of different textures is up to you and the program is set for six – the variable *sorts%* at line 690 is the one to alter in *Texture!*. If you do change it make sure you save the program in its original state first and save the amended one with a new name.

The program Texture! displays the first texture in a block of four at the top left of the screen. Top right you are asked for the name of the sprite you wish to colour in – try *Picture* or *Picture2* – which will load and draw itself to the right of the red line that halves the screen.

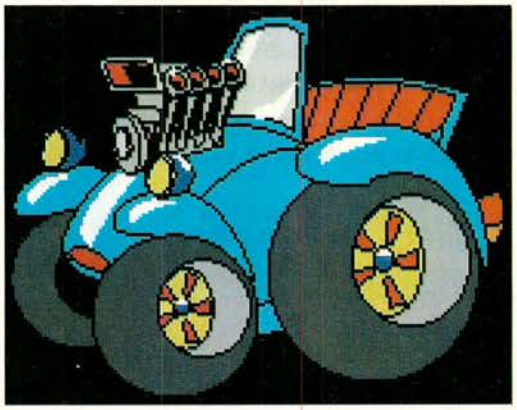
Use the mouse to position the pointer anywhere in the left half of the screen and click select to toggle through the sprite textures. The one displayed will be the texture that becomes the *fill*.

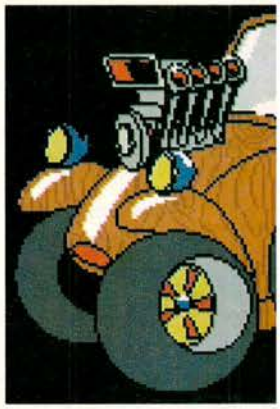
In my example I have drawn a man with a drab shirt and *de rigeur* jeans – all very prosaic. Let's spruce that shirt up a bit with a touch of the Hawaii 5-0.

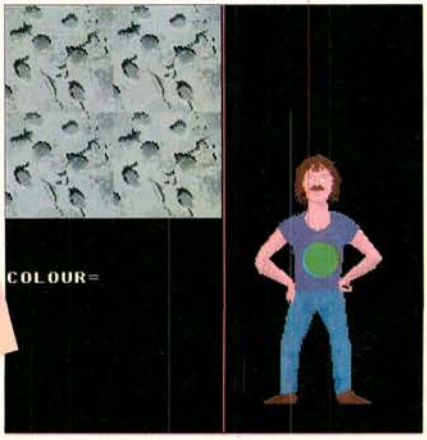
Areas are filled using colour and a scalable rectangle. Click Select for a start point and move the mouse to draw a rectangle around an area to be filled.

Click Select again when you are happy with the area or click Adjust to cancel. Now click Select on the colour you want filling and the area with *that* colour in the rectangle will be filled with the currently selected texture. Try it, it's a lot easier to use than explain.

You do not have to click on the colour in the rectangle as clicking







● *Texture! displays the first texture in a block of four at the top left of the screen*

● *Areas are filled using colour and a scalable rectangle*

touches

Using textures you can add depth and character to your art. Mike Goldberg shows you how

Select anywhere will use the colour on the screen where you clicked as the colour of pixels to be replaced by the texture.

Each pixel of the selected colour within the rectangle is replaced by the corresponding ones in the texture sprite. If it's not the selected colour nothing is printed and the program moves on to the next pixel of the texture.

The reason for having four blocks of the texture sprite displayed is so you can draw the rectangle in four directions: Up-left, up-right, down-left and down-right. By doing this you can make the fill operate in different directions.

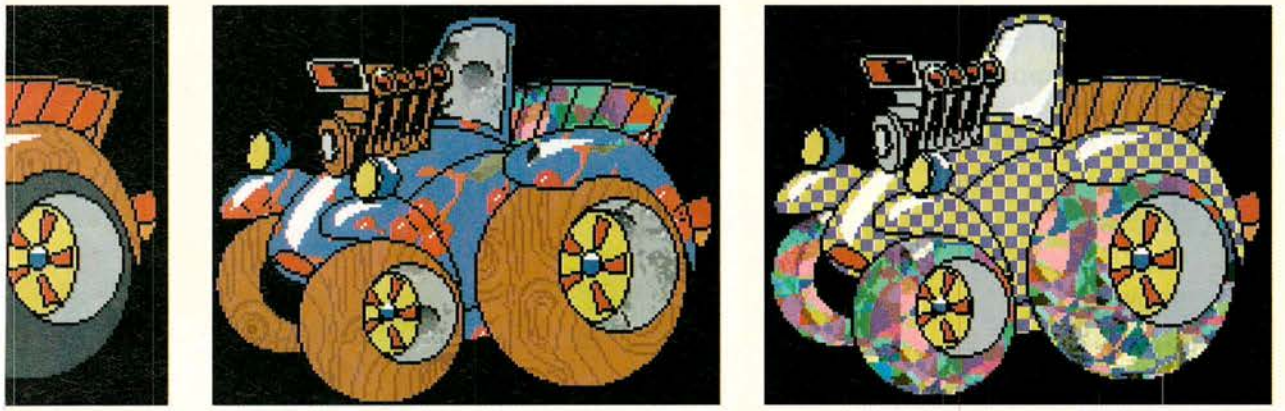
Continuing with my picture I have decided to alter the trousers a tad over the top perhaps and the finished item leaves a lot to be desired, but you get the idea. Indeed you can *get* the picture by saving it as a sprite.

Each saved sprite is called *Texture-n* where *n* is the subsequent number of each save incremented by one each time. To save any size area of the screen press S when the pointer is in the right-hand side of the screen, preferably at a corner of the image being saved. A green rectangle will be drawn at the pointer. Move the mouse to alter the rectangle size and click Select to save – Adjust to cancel.

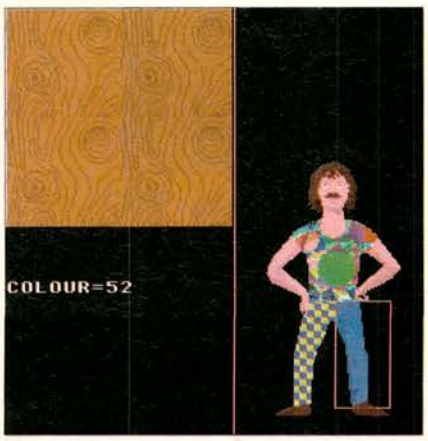
A couple of points to note. The number of the colour selected to fill over appears at the left of the screen where it says *Colour=*. This is just a numerical indication as to the colour selected and may help in identifying areas you want to fill. Also there is no *undo* function and as it is a very rudimentary program take care when using at speed.

Having said that I have managed to come up with some pleasing results from just half a dozen textures and a !Draw image of the car of my dreams – or nightmares. With a little imagination you could create some very useful textures like shiny metal, water, brick patterns, eggshell or tortoiseshell, mother of pearl and so on.

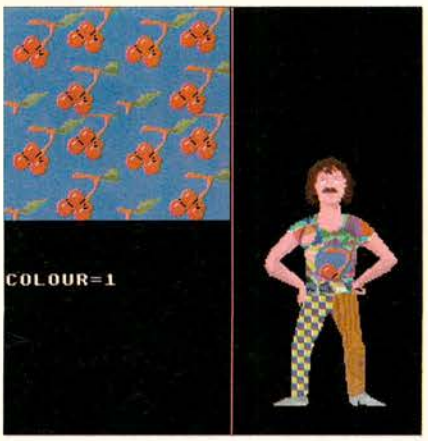
Take care at this creation stage and the resultant filled image can be stunning. It's a good idea to colour the original sprite in totally different colours for different areas – you can isolate these areas easier when it comes to filling them. Now where have I seen a man made of wood before?



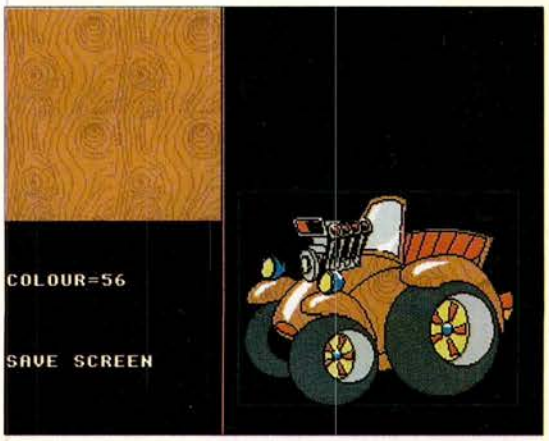
● *Herbie has nothing on these designs*



● *Next it's the turn of the trousers to get the treatment*



● *The finished item can be saved as a sprite*



● *Save any size area of screen using the green rectangle and move the mouse to alter the rectangle size*

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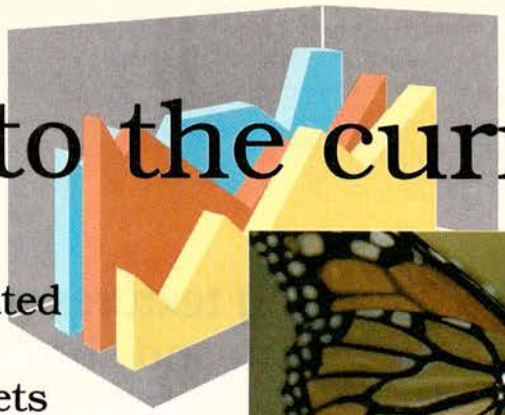

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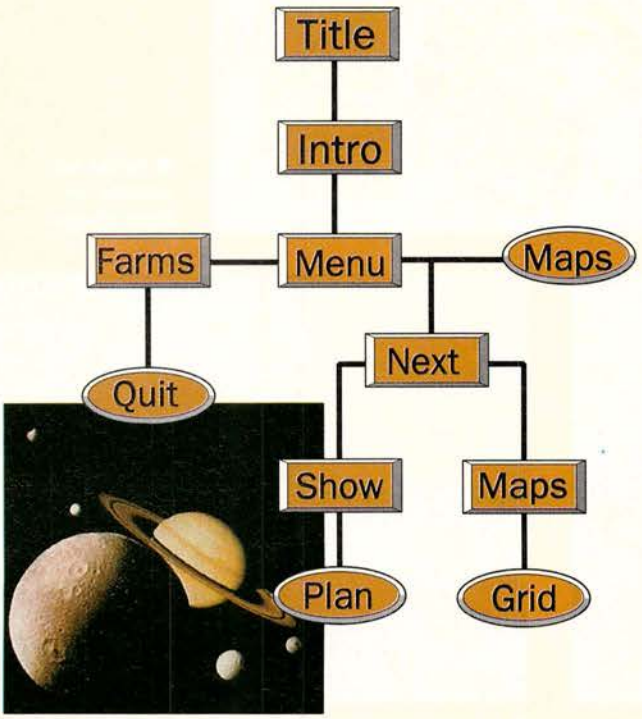

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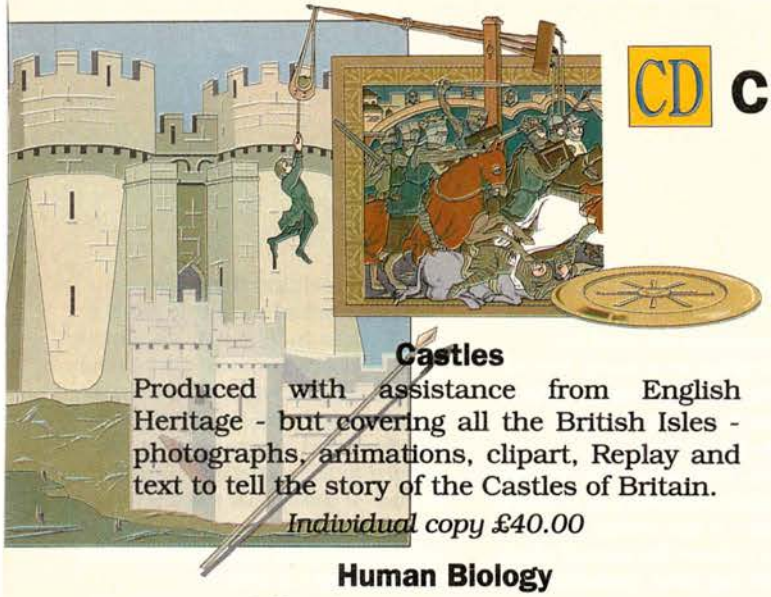

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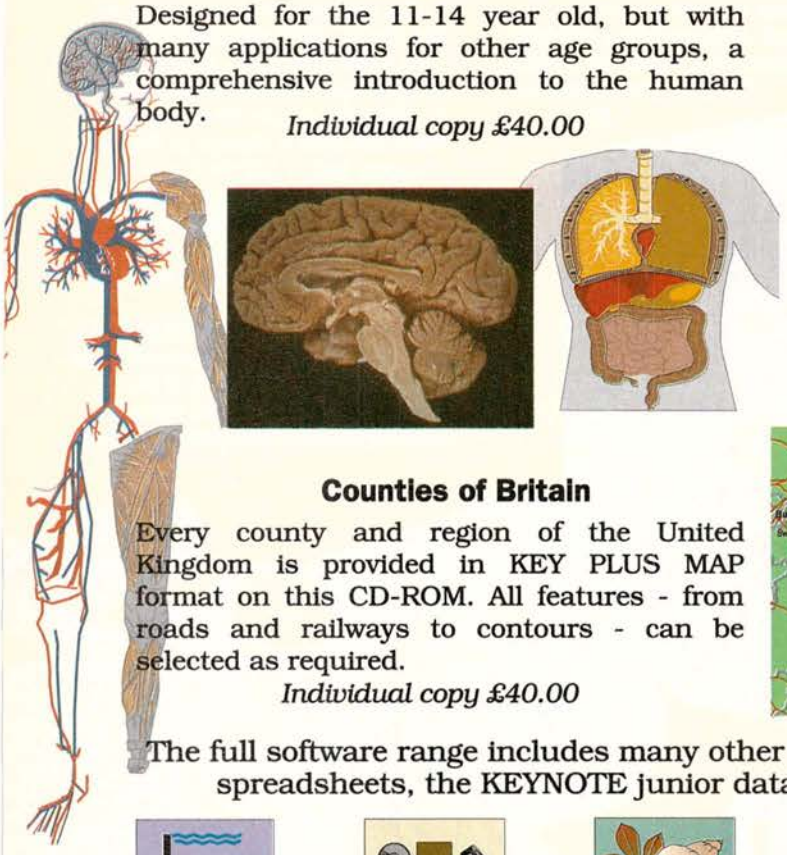

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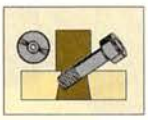

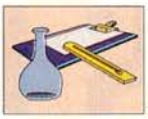

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Stars in your LEDs

Mike Cook considers how to send data to the computer

LAST month we looked at the shaft encoders for the computer-guided telescope. We saw how to turn the telescope's movement into a digital count. Now it is time to see how we can get that information into the computer.

As I mentioned in the first article there are various options for doing this – the one I have chosen is the serial port. There are many reasons why this is the best choice: The most pressing is that the telescope is likely to be located some distance from the computer and the RS232 voltage standards are ideal for communication over many tens of meters. The use of a serial interface also means that virtually any computer can be used.

However, this part of the circuitry is not as straightforward as it might first appear – it has several jobs to do. Figure I shows the overall block diagram of the serial transmitter.

You will see that a UART (Universal Asynchronous Receiver and Transmitter) is used to serialise the data and there is an RS232 driver. In addition there is a transmit control section to tell the UART when to send data and finally an optional overrun monitor circuit.

This last part will indicate if you are moving the telescope faster than the change in information can be relayed to the computer. A useful feature of this is that there is an indication when you are approaching the limiting speed but have not yet reached it.

The transmit control section of the circuit, although consisting of only a few logic gates, is the most complex part to understand. Its job is relatively simple: To detect when there has been a change in the axis counters and to tell the UART to transmit the new count. Now, you might think this simply involves sending the data whenever the axis counters changed, but it's not that simple.

When the UART is sending data it can hold the next byte to send in its holding buffer. However, if the telescope is being turned quickly it is likely that the situation will arise

where the UART's buffer is full and a change has occurred.

In this situation we want to register a change has occurred and remember that when the UART's buffer is empty we need to fill it. The block diagram of this circuit is shown in Figure II.

The very narrow pulses from each axis counter's clock inputs (shown in last month's circuit) are combined to form a *request to send* pulse. This pulse sets a flip-flop which is used to remember the request.

If the UART is ready to send the next byte of data AND we have a request then the UART is pulsed to send the data. This same pulse also resets the Flip Flop.

In order to hold the *send data* pulse long enough for the UART's circuitry we need a delay to *stretch* the pulse. Now, if the UART is not ready to receive data the flip-flop is not reset and holds the request until it is.

Note that other requests can come along while the UART is busy but this will not cause any trouble unless there are too many of them.

If you refer back to Figure I you will see that the data from the two axis counters are passed through latches.

This is to prevent any change in data during the loading of the UART. My original circuit did not have latches here as I thought they were not needed.

This was because the axis counters were synchronous counters which are ones where all the outputs change at the same time, therefore there should be no need of a latch. However, as we have seen, it takes a finite time to transmit the data along the serial link and the UART can spend time when it is busy and not able to accept data.

When it finally becomes free and is able to transmit the data the counters could be in the process of changing. This could lead to a spurious count being sent. In fact, this happened to me during development – the system seemed to be dropping pulses when I moved the telescope rapidly.

At first I thought this was due to data being produced too rapidly for the serial link to cope with, so I developed the overrun monitor. However, I still kept missing pulses at speeds below the maximum but above a certain rate. This was only cured by the introduction of the latches.

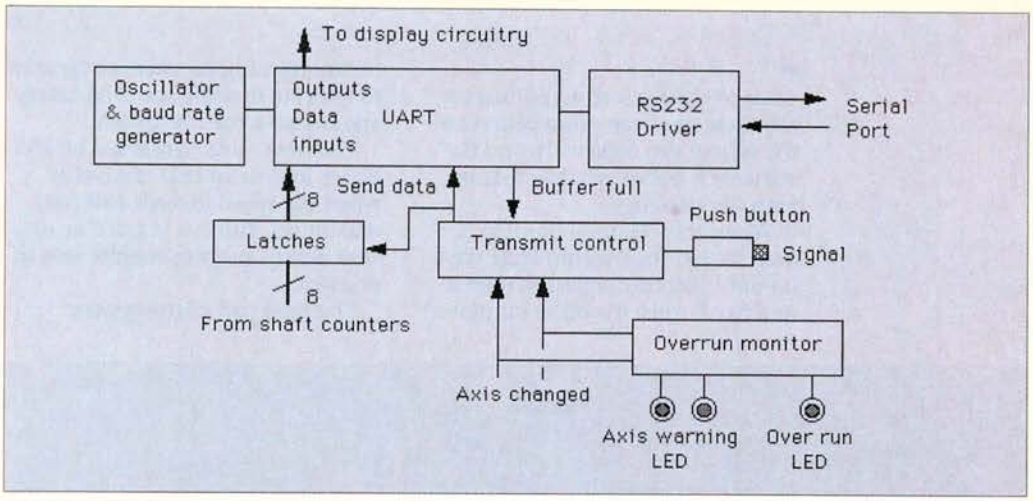


Figure I: Block diagram of the serial transmitter

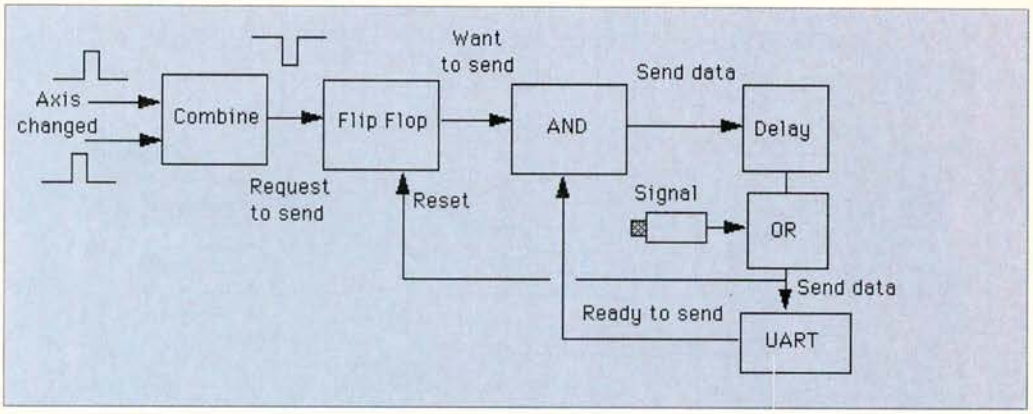


Figure II: Block diagram of transmit control

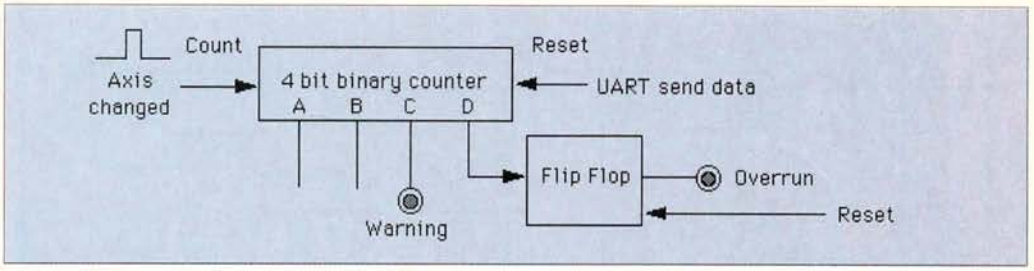


Figure III: Block diagram of overrun monitor

Now to Figure III. For simplicity only one monitor is shown but there is one for each axis. I originally developed this part to see if I was moving the telescope too fast. It is an optional part of the circuitry and you might want to exclude it to save costs.

However, if you are running the unit at one of the lower baud rates, or have a high resolution on the axis, it is useful while you train yourself as to how quickly you can slew your telescope.

The principal is simple. There is a 4-bit count (16 states) on each axis and the computer decides the direction and size of the move by comparing the current value with the last one. This means that to preserve the directional data the count must be transmitted before there is a difference in the count of greater than eight.

Therefore, on each axis you have a separate monitoring counter being clocked up whenever the axis counter is clocked up or down. This monitoring counter is reset whenever the UART sends a byte.

If this counter ever reaches a

➤

value of eight (most significant bit set) there has been more data than the system can cope with, and the software is out of synchronisation with the telescope.

When this occurs, a flip-flop is fired so that the overrun light stays on until you take action to reset it. As a free bonus, the other outputs of the monitoring counter can be used to indicate that the speed of data is approaching the maximum.

The next most significant bit will be set, and so an LED can be lit, when the speed exceeds half the maximum. This is a visual clue to slow down, and works quite well in practice.

The final part of the system involves the *Signal* button. In practice I found it useful to be able to signal something back to the computer, like when I wanted to calibrate the system or change the operating mode. But as we are using all the data bits to indicate the axis count this posed a bit of a problem.

The simplest solution would have been to use one of the data bits to indicate the byte was either a signal from me or a change in data. However, I did not want to reduce the number of bits I sent as this would affect the speed I could move the telescope.

The solution is quite simple: Whenever the telescope moves, the data sent to the computer is different from the last time. If I sent the same data twice, I could use the software to detect this and interpret it as a signal from me.

Therefore, all you have to do is to override the transmit control circuitry and send an extra byte.

If you look at Figure IV you will see the circuit diagram of all the sections we have been talking about this month. The power supply connections of some chips have been omitted for clarity.

The signal circuit is simply a push-to-make switch between earth and the *data send* input of the UART. You will notice that when this is pressed the output of the inverter gate is shorted to earth. Do not worry, they are designed to withstand that sort of treatment.

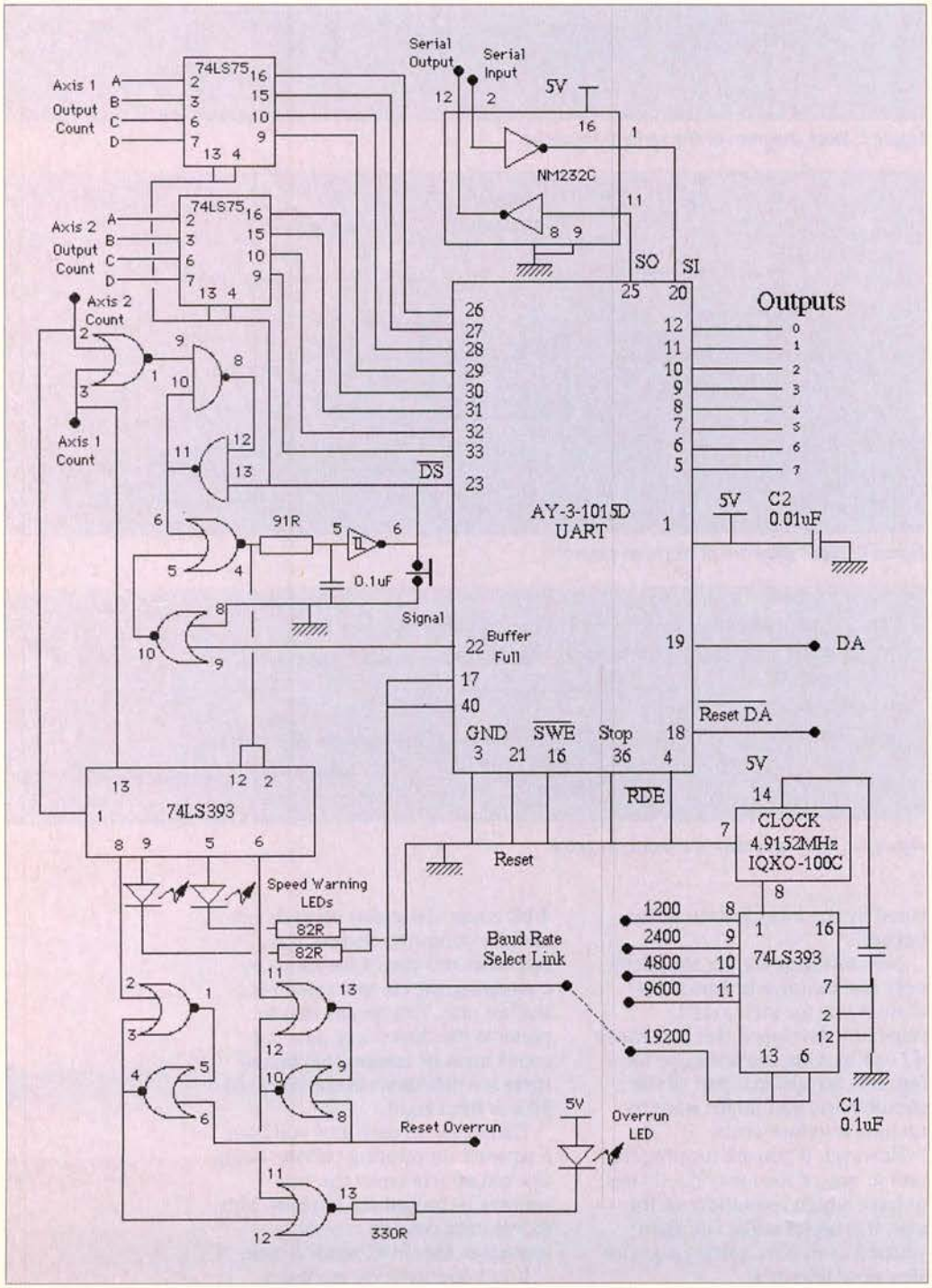
The UART and baud rate generator are very similar to the serial User Port described in the February 91 Body Build article.

It is capable of running at speeds from 19200 to 1200 baud. I would recommend that you run it as fast as your computer can manage.

However, I did not use the same trick of generating the negative voltage rail because this system was likely to be used over long distances.

Instead I used a NM232C module made by Newport which has a driver and receiver in one package. It also generates the pulse and -12 volts needed for the RS232 signal from just a 5 volt supply.

This makes the construction very simple. The axis counter signals are taken from the circuit given last month as are the axis counters. The outputs from the UART and the *Reset overrun* signal are connected to the display circuitry which we shall look at next month.



● *Figure IV: The circuit diagram of the serial transmitter*

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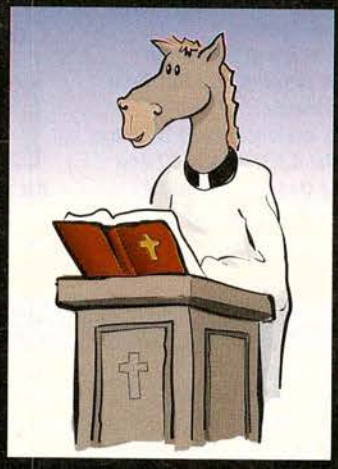

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STALLION SOFTWARE

Low spec upgrading

HAVING only recently acquired my A3010, I have been reading my back issues of *Acorn Computing* for reviews on what packages and products are available.

I am surprised to notice that many of the hardware upgrades – for example colour cards – are not available for this machine. I have also read that the SCSI cannot be implemented on either the A3010 or A3020 and therefore CD-Rom and daisy-chained hard drives are not possible.

I can see that the upgrade from the ARM250 to ARM3 is not possible due to the extra work done by the ARM250.

Is this machine in itself – a worthy addition to the Acorn range – to be ignored in hardware upgrades? Or will these products become available at a later date and at a greater cost?

I bought a 2Mb memory upgrade with the computer and was told at the time that the memory could not be increased beyond this. Now I see that Dabhand Computing are advertising 4Mb for the A3010. Does this work the same way as normal ram and if so why wasn't it available earlier?

Will colour cards and the like become available or is my machine limited to its 256 colours forever? – **Michael Sandells, Preston, Lancashire**

● *I'm afraid you haven't been reading carefully enough. Complete hard disk and SCSI upgrades are available from third parties, in particular the HCCS Ultimate upgrade system.*

In addition, a new SCSI system working via the parallel port has been created by Atomwide.

Colour cards are unlikely to be made available for the A3010, A3020 and A4000 because they are specialist devices that don't particularly affect the day-to-day running of your machine so these don't provide sufficient market for manufacturers.

Officially the A3010 cannot be upgraded to 4Mb so the existence of an upgrade is a bonus not a reason to complain. At the time you were informed correctly – your dealer may not have known about the upgrade.

If you really wanted all these extras perhaps you should have bought an A5000?

Splitting font directories

I WANT to prevent the Fonts available on start up from taking over my own fonts in a DTP program – both Impression and Ovation. At the moment the only way I can do this is to create a !Fonts file of my own fonts and force the computer to see this before I run the program.

This is tedious. Could you tell me how to do this so that I can simply *click* on the required program and my fonts will load. –**James Mansfield, Churt, Surrey**

● *Good news and bad news – first the good. There are several programs in the Public Domain to help create font directories for you such as WhichFont? available from The Datafile among others. New from LOOKsystems is the excellent Font Directory which is a very nice commercial product – reviewed in this issue.*

The bad news, is that these require RISC OS 3. If you don't plan to upgrade, your own solution is really as straightforward as it gets.

Colourless printing

AS A surprise my two sons clubbed together and bought me a new HP550C colour printer for my A5000. Alas it prints in black and white on most programs but not in colour. We have tried using both the HP Deskjet+ and HP Deskjet in the Printers application.

On the HP software, with the 550C I have been unable to find any reference to an Acorn machine of any description. Surely if I bought an A5000 in March and a new printer in August they should be compatible. Have I bought old or new technology? What do I need to do to get it to work? – **Eric Thompson, Billingham, Cleveland**

● *The printer drivers you have been using will produce black copies as you have found out. To get a colour print out you'll need to change the cartridge and the printer drivers. These colour drivers do not come as standard with the machine and Hewlett Packard – as you've discovered – do not supply any drivers for the Acorn machines.*

However, you have a choice of Acorn companies supplying RISC OS 3 colour drivers for your printer: Computer Concepts (0442 63933), Oak Solutions (0954 211760) and Risc Developments (0727 840303).

Bootless

I MADE myself a !Boot file consisting of !Edit, !Paint , !Draw, !Printers and !Configuration and a pretty picture of Starbase as my backdrop for by A3000 with 85Mb hard disk, 4Mb ram and RISC OS 3.1.

Having copied it on to my hard disk – as told to by the RISC OS 3 manual – I clicked on Auto Boot before I saved it.

When I turned on my computer I expected to see my desired desktop, but no I get the same old boring one as before. What is the solution? – **Ben Crowe, London**

● *Although the current system for boot files is better than before it has to be said that the Acorn desktop boot procedure is a pain. After creating the*

Labelled help

I'VE been using the !Label printer that I found from reading your pages and have spent a long time getting to grips with it. For my purposes each sheet of fanfold contains 16 labels but I only wanted to print out one row of two labels each time.

After much experimentation I found that I had to create a new printer driver using !PrintEdit in which I amended an FX-80 driver and deleted the Y coordinate and the form feed commands for each available graphics resolution, renaming it Label.

The next task was to use the *Edit paper sizes* once the new driver was installed on the iconbar and create a new paper size equivalent to the dimensions of the first row of labels. The driver was configured to this size of paper and to *Manual*.

This somewhat tedious approach enabled me to print out one row of labels without a form feed after each attempt. Unfortunately, the synchronisation of the labels in the printer slowly becomes less and less with each single row printed requiring re-positioning the printer head to the top of the next row of labels.

I think this is only a case of fine tuning the measurements used and I hope to eliminate the slippage totally soon. – **P.A. Nelson, Hamble, Southampton**

Downgrading RISC OS 3

PLEASE help. I have an A5000 with RISC OS 3.1. I accidentally loaded the program FastMove from the July MegaDisk which is only intended for those with RISC OS 2.

Since then when I switch on everything boots as normal. But if I click on the floppy drive icon the disk directory opens and the icon disappears leaving the name banner 0: and if I open Apps the Configure icon has disappeared.

In addition, if I click on anything in the hard disk directory it will load both my IDE icons and all disk names disappear. At this stage I decided to check the configure file by typing *STATUS and found that this has been changed and it doesn't reset even after a hard break.

How do I get my machine back to the one I know and love? – **P.J. Elssy, Blackheath, London**

● *While I'm not completely familiar with the details of how FastMove operates it's highly unlikely that it would cause the problems you're describing and it's more likely to be just a coincidence.*

The only way any program could affect your machine between power-ups is if it altered your cmos ram settings or by being a virus. FastMove has no reason to alter your cmos ram, but a nasty virus might do that. Pressing Control+Break doesn't change cmos settings.

It sounds very much as if you have a virus. I strongly recommend you get a copy of the !Killer virus detection and removal system from Pineapple Software.

This software has the advantage that it is updated at least three times each year and a virus killer is only as good as its last version.

file you have to load it into Edit and take out everything you don't want.

Anyway I, too, have found that the auto-boot option often completely fails to work as expected so what I recommend is setting it up manually. Let's assume the system has an IDEFS and it's drive number five that's being booted from. Press F12 and type:

```
*IDEFS
*DRIVE 5
*Configure FileSystem IDEFS
*Configure Drive 5
*Dir IDEFS::5.$
*OPT 3,2
*Configure Boot
```

That should do the trick. Replace IDEFS with the filing system your hard disk is on, and the drive number by the number you want to boot from.

Accessing fonts

IN reply to Mike Carr's letter in the September issue, you suggest that EasiWord from Minerva will allow the use of a printer's own fonts. I believe that this should be possible, but I can't get my Olivetti JP150 to print from EasiWord on my A3010 in anything other than Courier 10.

Could this be the fault of the HP DeskJet Plus printer driver I'm using? Alternatively am I missing something? If so, please enlighten me – you're my last hope of getting this to work. – **James Cummings, Morpeth, Northumberland**

● *Do you know what fonts come on your printer? If not there is usually a test function on it which will print its built-in fonts without computer or printer driver being involved.*

The HPDeskJet Plus printer driver is the right one for your Olivetti and will let you print all the fonts you have in your !Fonts folder as and when they appear in your documents.

However, EasiWord prints text quickly as it is not downloading these outline fonts but plain text. If you want to access your computer's fonts you'll need a wordprocessor or DTP package that uses them – there is a good range.

To use the fonts on your printer you'll have to alter the settings and for this you should refer to the manual. Set the Olivetti manually to the font you want before you start downloading text and check each time you print as some software may change the settings.

A dotty problem

I HAVE had difficulty loading the Domino game from the subs disk. When I try I am given the error message *Channel at 4490* referring to line 4490 it says:

```
4490 VDU23,Y%+224,BGET#Z%,BGET#Z%,BGET
#Z%,BGET#Z%,BGET#Z%,BGET#Z%,BGET#Z%,BG
ET#Z%
```

I also dearchived the program and ran it on the !65Host with the same result. – **G.J. Done, Almonsbury, Bristol**

● *Although you got the same error whether running on the native Acorn machine and on !65Host the reason was slightly different. The Domino game requires the file* VDUs *which contains the character definitions but it looks in the current directory for it – because it's an old BBC Micro game.*

When you ran it on the native Acorn machine the current directory is not the one the program is in, so it couldn't find VDUs.

When you de-archived it you didn't include the VDUs file so when run on !65Host it couldn't find the file even though it was looking in the right place this time.

As an afterthought, a little bit of code would be useful that hooks into the FileSwitch module and intercepts whenever a file (not application) is double-clicked and creates a system variable of the form:

```
File_XXX$Dir
```

where XXX is the file type. Any takers?

Additional control

AS A relatively new user of my A3000 I would appreciate advice concerning buying and using joysticks. I have young children who would like to use the computer for playing games but unfortunately give the keyboard a hard time.

I understand that it is not just a matter of plugging in a joystick but I'll need an interface and a disk. Can you recommend a joystick and connection that is reasonably easy to load and use and will not affect the other functions of the machine? – **Peter Snelling, Cornhill on Tweed, Northumberland**

● *We had a DIY solution in the August issue of the magazine but if you want to buy an interface various ones are available from companies such as Vertical Twist or CU Electronics who also product the ProPad which plugs into your printer port and doesn't need an interface.*

Shop around and see what the best price is. Some interfaces have a switch from printer to joystick mode so you don't have to unplug anything.

When it comes to joysticks you can use any Atari-style joystick with the interface.

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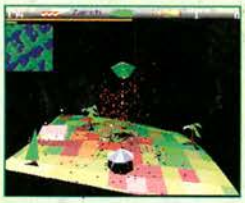

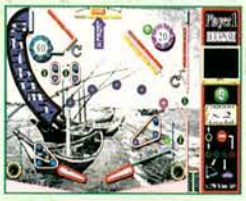

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